



Pos.		Part No.	Type	Page	
1	Multi-axis controller	5100...	V 6	1/100	
		5102...	VV 6	1/102	
		5104...	V 6 Ex	1/154	
		5110...	V 11	1/110	
		5120...	V 5	1/120	
		5122...	VV 5	1/122	
		5130...	V8	1/130	
		5132...	VV 8	1/130	
		5140...	V 10	1/140	
		5142...	V 14	1/142	
		5144...	V 20	1/144	
		5150...	V 3	1/150	
		5152...	V 18	1/152	
		Double-handle controller	5160...	D/DD 64	1/160
			5162...	D 8	1/162
			5164...	D 3	1/164
			5180...	S 1	1/180
			5214...	S 14	1/188
	Single-axis controller		5200...	S 2/SS 2	1/200
		5202...	S 21/SS 21	1/202	
		5204...	S 22/SS 22	1/204	
		5208...	S 23	1/208	
		5212...	S 3	1/212	
		5216...	S 6	1/216	
		5220...	N 6	1/220	
		Control-switch Potentiometer/Encoder e.t.c. Operator handles Palm grip	5284...	B 1	1/284
			5285...	B 2	1/285
			5286...	B 3	1/286
	5288...		B 4	1/288	
	5289...		B 5	1/289	
	5290...		B 6	1/290	
	5292...		B 7/8	1/292	
	5294...		B 9	1/294	
	5296...		B 10	1/296	
	Housing Command and indicating devices				1/350
				1/360	
2	Crane control unit		KST 2	2/020	
			KST 3	2/030	
			KST 4	2/040	
			KST 5	2/050	
			KST 6	2/060	
			KST 7	2/070	
			KST 75	2/072	
			KST 8	2/080	
			KST 9	2/090	
			KST 15	2/102	
			KST 18	2/108	
		Driver's seat		KFS 2	2/130
				KFS 4	2/132
				KFS 6	2/134
				KFS 7	2/136
			KFS 8	2/138	
			KFS 9	2/140	
	Portable control unit		KFS 10	2/142	
			TS 1	2/150	
	Control pedestal for offshore		TS 2	2/152	
			U 22/32	2/160	
		U 23/23	2/162		
		U 25/32	2/164		
Pedant control unit		HT 1/2	2/170		
3	Pedal-controller		P 7/PP 7	3/100	
			P 8/PP 8	3/101	
			P 10/P 11	3/102	
			P 12	3/103	
			GE 1	3/200	
	Gear limit switch Copy-cam controller DC-contact Signal-cam controller		KVS	3/300	
			SO/SS	3/400	
			NU 1	3/402	
			NU 2	3/404	
			NU 3	3/406	
	Regulator electronic board Electronic (Amplifier) Electronic Profi-Bus Electronic CAN-Bus		ES/43	3/502	
			EP 1	3/510	
			EP 2	3/520	
			EP 3	3/530	
4	Spare parts			4/100	
5	Description data Technical data Representatives / another thing			5/001	
				5/100	
				5/900	



Our supplies are made in accordance with the „General Conditions of Supply and Delivery for products and services of the electrical and electronic industry“ of the German Electrical and Electronic Manufacturers' Association (ZVEI).

Please note additional:

Our catalog prices do not include value added tax, which is added separately.

The prices are ex-works in Leingarten excluding packaging. Packaging is charged at cost and cannot be returned. Our gross prices apply for orders below EURO 72,-. There is a minimum charge of EURO 24,-. Where possible, small orders should be combined.

We are entitled to charge any handling and production costs resulting from modifications of the order caused by the customer (both technical modifications and noncompliance of dead lines).

Payment may be made within 30 days without discount.

These conditions of payment shall be deemed to apply on receipt of our written order confirmation.

All delivery goods remain our sole and absolute property until paid for in full.

The **delivery period** commences only when all technical details have been clarified. Unforeseen circumstances justify an appropriate extension of the delivery period. All documents such as drawings, dimensional drawings, circuit diagrams, etc., are non-binding. We reserve the right to make any changes necessary, in particular technical changes.

Court venue will be exclusively 74072 Heilbronn, Federal Republic of Germany.

 **Warning**

Hazardous voltages are present on specific parts in this electrical device during operation.

Only qualified personal, paying attention to the relevant safety precautions, should install, maintain, modify or fit accessories to the controller. Non-observance of this warning can result in death, severe personal injury or substantial property damage.

Hausanschrift/office:

W. Gessmann GmbH
Eppinger Straße 221
D-74211 Leingarten

UST.Id.Nr.:

DE 145786508

Telefon/phone:

(+49) 0 71 31 - 40 67-0

Fax: Vertrieb/sales:

(+49) 0 71 31 - 40 67 10

E-mail:

gessmann@gessmann.com

Internet:

www.gessmann.com

MWSt. 65205/74401

Finanzamt Heilbronn

Banken/banks:

Baden-Württembergische Bank Heilbronn (BLZ 620 300 50) 70 49 52 9600

SWIFT-Code: BW BK DE 6S 620 · IBAN-Code: DE 23 620 300 50 7049529600

Deutsche Bank Heilbronn (BLZ 620 700 81) 01 94 605

SWIFT-Code: DEUT DE SS 620 · IBAN-Code: DE 14 620 700 81 0019460500

Kreissparkasse Heilbronn (BLZ 620 500 00) 4776

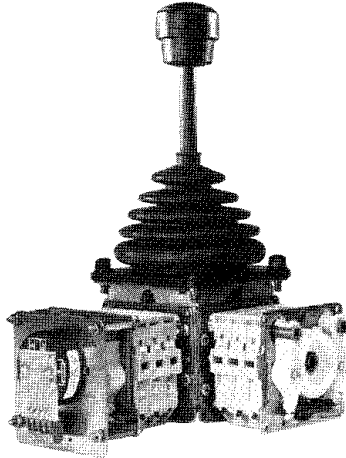
SWIFT-Code: HE IS DE 66 · IBAN-Code: DE 22 620 500 000 00 0004776

**Handelsregister/
commercial register:**

Heilbronn HRB 312

**Geschäftsführer/
manager:**

Gerhard Häußermann



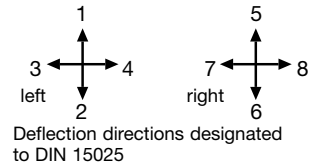
The multi-axis controller V 6 is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for hoisting applications. The modular design enables the switching device to be used universally. The V 6 is resistant to oil, maritime climate, ozone and UV radiation.

Contact complement 2 A 250 V AC 15 res. 1 A 24 V DC 13 (standard) or 4 A 250 V AC 15 (special)

Mechanical life 10 million (operating cycles)
Permissible ambient temperature Operation -40° C to +60° C
Storage -50° C to +80° C

Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection front IP 54 IEC 529 DIN 40050
Technical data look catalog 5/100
Description data look catalog 5/002

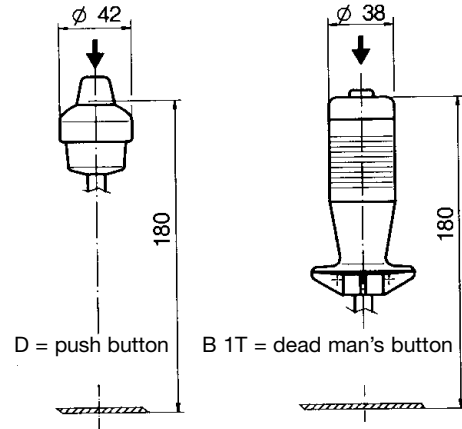
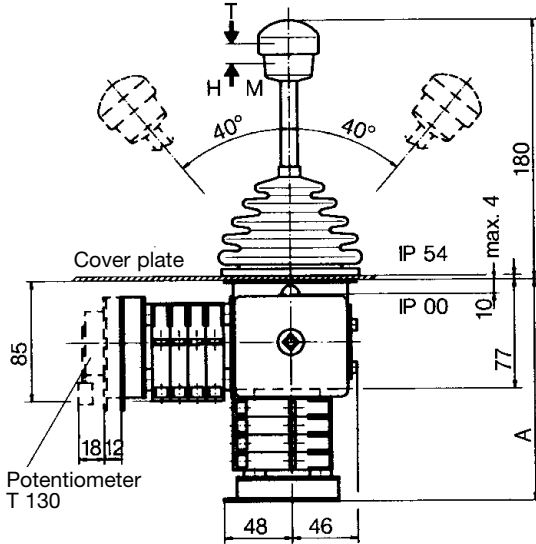
Spindle block with schematic representation of the master controller installation and deflection directions. Version shown for left-hand side installation (right-hand side installation is mirror image).



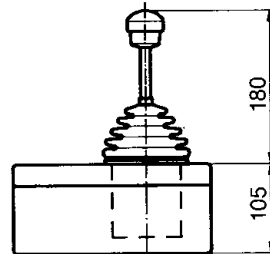
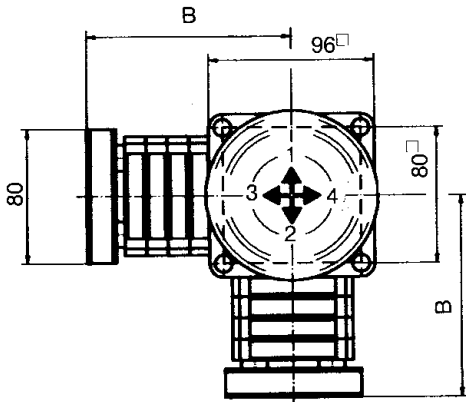
Pos.	V 61	V 61.1	V 62	V 64	V 64.1	Weight gramm	Part No. 5100...	Type	Price EURO
1						960		V 61	
2						980		V 61.1	
3						900		V 62	
4						1010		V 64	
5						960		V 64.1	
9									
10	Gate cross-shaped		(prohibits diagonal shifting)			60		P	
11	Gate special-shaped		(for e. H-gate)			60		P	
12	Spring return in 0-position		(for each direction)			110		Z	
13	Friction brake adjustable		(for each direction)			30		R	
14									
20	Control-handle with knob solid								
21	Control-handle with latch for mechanical zero interlock					50		M	
22	Control-handle with dead man's button 1 NO					100		T	
23	Control-handle with signal button 1 NO					100		H	
24	Control-handle with push button 1 NO					110		D	
25	Control-handle with flat push button 1 NO					110		DV	
26	Control-handle with palm grip B 1					40		B 1	
27	Control-handle with palm grip B 1 with push button top 1 NO					60		B 1T	
28	Control-handle long or short 200, 160 mm								
29	More knobs, grips and T-grips with and without signal devices look catalog 1/280...								
30	Masterswitch switching sequence 4-0-4					No. of contacts 2	290	01	
31						4	350	02	
32	Direction 1-2 and 3-4 each 1 masterswitch					6	410	03	
33	Switching program according contact-arrangement MS... look catalog 5/001 or to your contact-arrangement					8	470	04	
34						10	530	05	
35						12	590	06	
36	Switching sequence 5-0-5 or 6-0-6								
37	Micro changeover contact (MZT 1) positive opening					2			
40	Potentiometer e.t.c. each masterswitch with mounted Wire-wound potentiometer T 130, with centre tap linear Life 10 ⁷ switching cycles resistance 2 x 0,5/1/2/5/10 kOhm, 1,5 Watt wiper current max. 10 mA						70	P	
41	Prepared for mounting potentiometer shaft 6 mm adjusting-angle 2 x 150°							(P)	
42	Prepared for mounting potentiometer e.t.c. adjusting-angle variable.							(P)	
43	more Potentiometer e.t.c. look catalog 1/240...								
50	Steel sheet housing B 200 masterswitch max. size 05						1300	B	
51	Steel sheet housing B 230 x 340 masterswitch max. size 07						1500	B	
52	More housing look catalog 1/350								
60	Indicating labels not engraved with 2 or 4 arrows								
61	Engraved each 10 characters								
62									
70	Command and indicating devices look catalog 1/360								



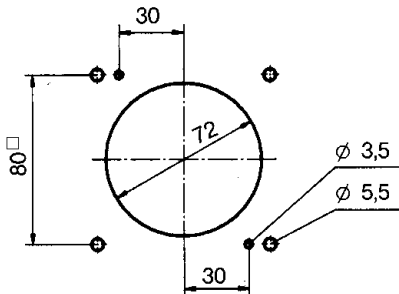
T = dead man's button
H = signal button
M = latch for mechanical zero interlock



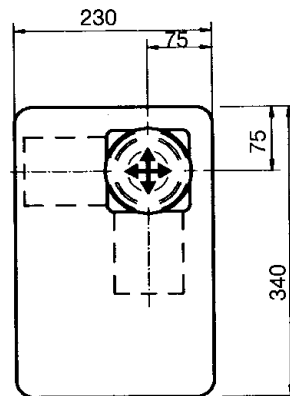
Type	No. of contacts	Dimension A	Dimension B
01	2	119	82
02	4	131	94
03	6	144	107
04	8	156	119
05	10	169	132
06	12	181	144



Steel sheet housing

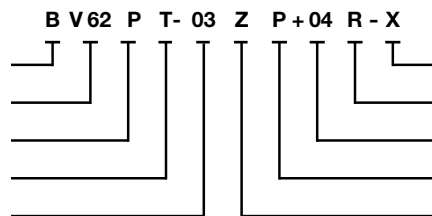


Hole pattern

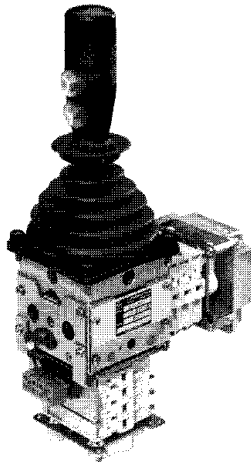


Example for type-sign

- Steel sheet housing
- Multi-axis controller
- Gate
- Dead man's button
- Masterswitch direction 1-2



- Special please to describe
- Friction brake direction 3-4
- Masterswitch direction 3-4
- Potentiometer e.t.c. direction 1-2
- Spring return direction 1-2



The multi-axis controller VV 6 is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for hoisting applications. The modular design enables the switching device to be used universally. The VV 6 is resistant to oil, maritime climate, ozone and UV radiation.

Contact complement 2 A 250 V AC 15 res. 1 A 24 V DC 13 (standard) or 4 A 250 V AC 15 (special)

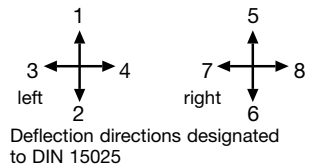
Mechanical life 20 million (operating cycles)
Permissible ambient temperature Operation -40° C to +60° C
Storage -50° C to +80° C

Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection front IP 54 IEC 529 DIN 40050

Technical data look catalog 5/100
Description data look catalog 5/002

Spindle block with schematic representation of the master controller installation and deflection directions.

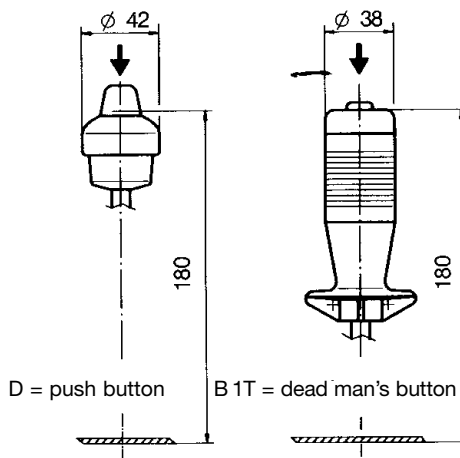
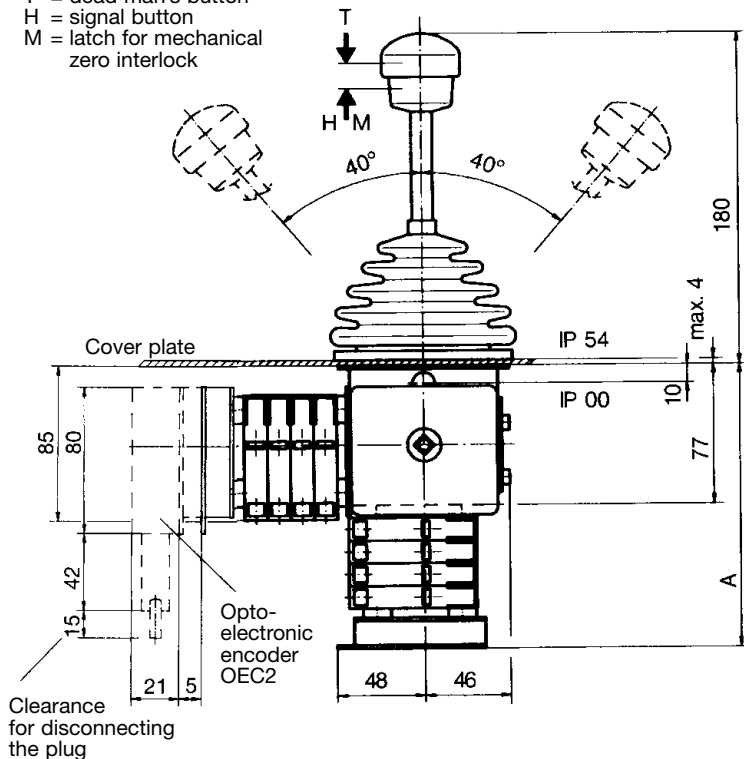
Version shown for left-hand side installation (right-hand side installation is mirror image).



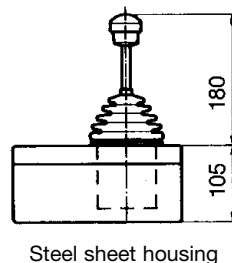
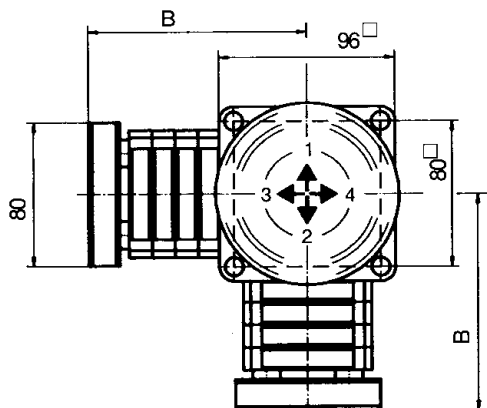
Pos.	VV 61	VV 61.1	VV 62	VV 64	VV 64.1	Weight gramm	Part No. 5102...	Type	Price EURO
1						960		VV 61	
2						980		VV 61.1	
3						900		VV 62	
4						1010		VV 64	
5						960		VV 64.1	
10	Gate cross-shaped (prohibits diagonal shifting)					60		P	
11	Gate special-shaped (for e. H-gate)					60		P	
12	Spring return in 0-position (for each direction)					110		Z	
13	Friction brake adjustable (for each direction)					30		R	
14									
20	Control-handle with knob solid							M	
21	Control-handle with latch for mechanical zero interlock					50		T	
22	Control-handle with dead man's button 1 NO					100		H	
23	Control-handle with signal button 1 NO					100		D	
24	Control-handle with push button 1 NO					110		DV	
25	Control-handle with flat push button 1 NO					110		B 1	
26	Control-handle with palm grip B 1					40		B 1T	
27	Control-handle with palm grip B 1 with push button top 1 NO					60			
28	Control-handle long or short 200, 160 mm								
29	More knobs, grips and T-grips with and without signal devices look catalog 1/280...								
30	Masterswitch switching sequence 4-0-4					No. of contacts 2	290	01	
31						4	350	02	
32	Direction 1-2 and 3-4 each 1 masterswitch					6	410	03	
33	Switching program according contact-arrangement MS... look catalog 5/001					8	470	04	
34	or to your contact-arrangement					10	530	05	
35						12	590	06	
36	Switching sequence 5-0-5 or 6-0-6								
40	Potentiometer e.t.c. each masterswitch with mounted Wire-wound potentiometer T 130, with centre tap linear Life 10 ⁷ switching cycles resistance 2 x 0,5/1/2/5/10 kOhm, 1,5 Watt wiper current max. 10 mA						70	P	
41	Prepared for mounting potentiometer shaft 6 mm adjusting-angle 2 x 150°							(P)	
42	Prepared for mounting potentiometer e.t.c. adjusting-angle variable.							(P)	
43	more Potentiometer e.t.c. look catalog 1/240...								
50	Steel sheet housing B 200 masterswitch max. size 05						1300	B	
51	Steel sheet housing B 230 x 440 masterswitch max. size 07						1600	B	
52	More housing look catalog 1/350								
60	Indicating labels not engraved with 2 or 4 arrows								
61	Engraved each 10 characters								
62									
70	Command and indicating devices look catalog 1/360								



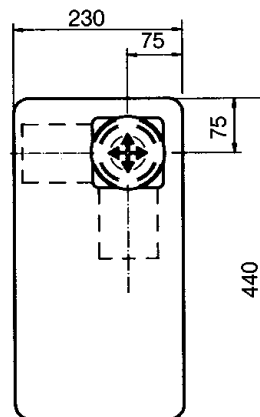
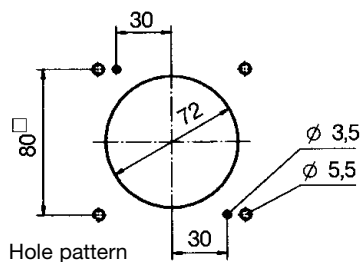
T = dead man's button
H = signal button
M = latch for mechanical zero interlock



Type	No. of contacts	Dimension A	Dimension B
01	2	119	82
02	4	131	94
03	6	144	107
04	8	156	119
05	10	169	132
06	12	181	144



Steel sheet housing



Example for type-sign

Steel sheet housing

Multi-axis controller

Gate

Dead man's button

Masterswitch direction 1-2

BVV 62 P T- 03 Z P + 04 R - X



Special please to describe

Friction brake direction 3-4

Masterswitch direction 3-4

Potentiometer e.t.c. direction 1-2

Spring return direction 1-2



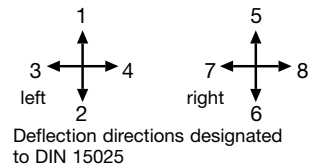
The multi-axis controller V 6 is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for hoisting applications. The modular design enables the switching device to be used universally. The V 6 is resistant to oil, maritime climate, ozone and UV radiation.

Contact complement 2 A 250 V AC 15 res. 3 A 24 V DC 13

Mechanical life 10 million (operating cycles)
Permissible ambient temperature Operation -40° C to +60° C
Storage -50° C to +80° C

Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection front IP 54 IEC 529 DIN 40050
Technical data look catalog 5/100
Description data look catalog 5/002

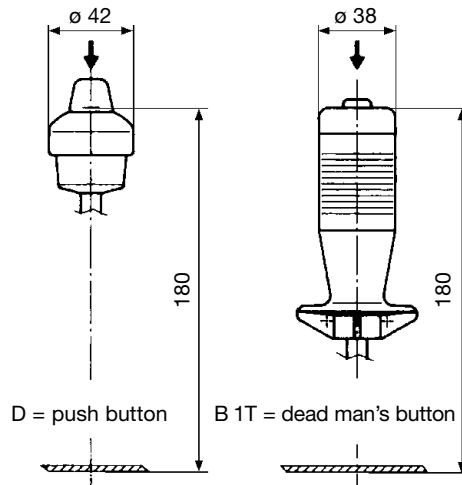
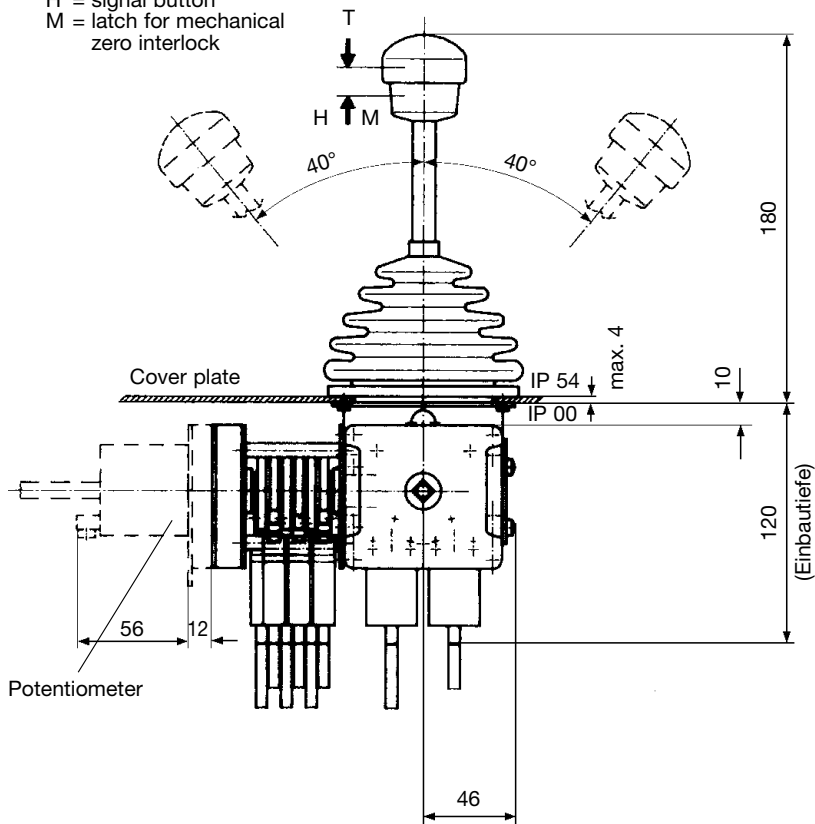
Spindle block with schematic representation of the master controller installation and deflection directions. Version shown for left-hand side installation (right-hand side installation is mirror image).



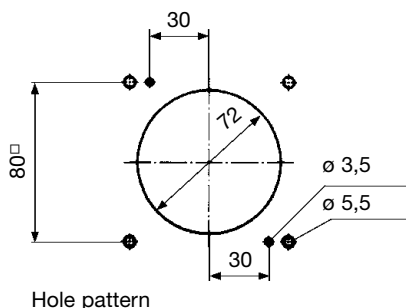
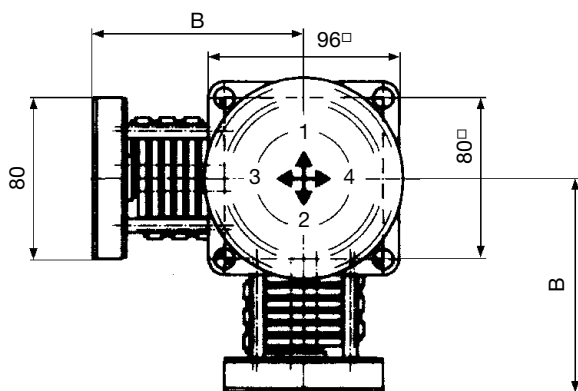
Pos.	V 61	V 61.1	V 62		Weight gramm	Part No. 5104...	Type	Price EURO
1					960		V 61	
2					980	V 61.1		
3					900	V 62		
4								
5								
10	Gate cross-shaped		(prohibits diagonal shifting)		60		P	
11	Gate special-shaped		(for e. H-gate)		60		P	
12	Spring return in 0-position		(for each direction)		110		Z	
13	Friction brake adjustable		(for each direction)		30		R	
14								
20	Control-handle with knob solid							
21	Control-handle with latch for mechanical zero interlock				50		M	
22	Control-handle with dead man's button	1 NO	Microchange over contact explosion protection		100		T	
23	Control-handle with signal button	1 NO	EExdIICT 6		100		H	
24	Control-handle with push button	1 NO	PTB No. Ex-91C 1083 X		110		D	
25	Control-handle with flat push button	1 NO	sealed cable		110		DV	
26	Control-handle with palm grip B 1		3 metre long		40		B 1	
27	Control-handle with palm grip B 1 with push button top	1 NO			60		B 1T	
28	Control-handle long or short 200, 160 mm							
29								
30	Masterswitch switching sequence 4-0-4			No. of contacts 2	290		01	
31			Microchange over contact explosion protection	4	350		02	
32	Direction 1-2 and 3-4 each 1 masterswitch		EExdIICT 6	6	410		03	
33	Switching program according contact-arrangement MS... look catalog 5/001		PTB No. Ex-91C 1083 X	8	470		04	
34	or to your contact-arrangement		sealed cable	10	530		05	
35			3 metre long	12	590		06	
36	Switching sequence 5-0-5 or 6-0-6							
40	Potentiometer e.t.c. each masterswitch with mounted Wire-wound potentiometer T 238, with centre tap linear Life 5 x 10 ⁶ switching cycles resistance 2 x 5 kOhm, 1 Watt wiper current max. 10 mA in housing explosion protection EExdIICT 6 PTB-No. Ex-85/1131 sealed cable 3 metre long				70		P	
41	Prepared for mounting potentiometer shaft 6 mm adjusting-angle 2 x 150°						(P)	
42	Prepared for mounting potentiometer e.t.c. adjusting-angle variable.						(P)	
43	more Potentiometer e.t.c. look catalog 1/240...							
50								
51								
52	Housing look catalog 1/350							
60	Indicating labels not engraved with 2 or 4 arrows							
61	Engraved each 10 characters							
62								
70	Command and indicating devices on enquiry							



T = dead man's button
H = signal button
M = latch for mechanical zero interlock



Type	No. of contacts	Dimension B
01	2	82
02	4	94
03	6	107
04	8	119
05	10	132
06	12	144



Example for type-sign

V 62 P T- 03 Z P + 04 R - X

Multi-axis controller
Gate
Dead man's button
Masterswitch direction 1-2



Special please to describe
Friction brake direction 3-4
Masterswitch direction 3-4
Potentiometer e.t.c. direction 1-2
Spring return direction 1-2



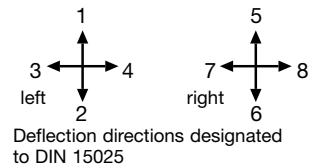
The multi-axis controller V 11 is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for hoisting applications. The modular design enables the switching device to be used universally. The V 11 is resistant to oil, maritime climate, ozone and UV radiation.

**Contact complement 2 A 250 V AC 15 res. 1 A 24 V DC 13 (standard)
or 4 A 250 V AC 15 (special)**

Mechanical life 10 million (operating cycles)
Permissible ambient temperature Operation -40° C to +60° C
Storage -50° C to +80° C

Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection front IP 54 IEC 529 DIN 40050
Technical data look catalog 5/100
Description data look catalog 5/002

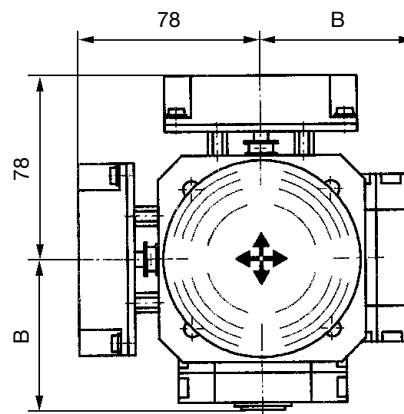
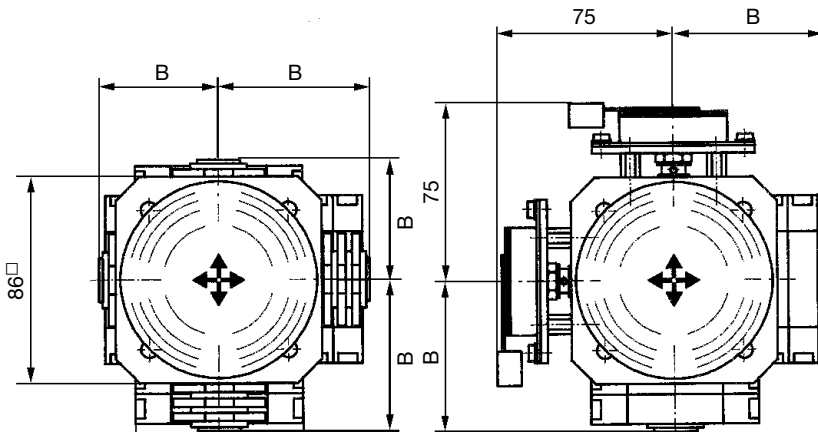
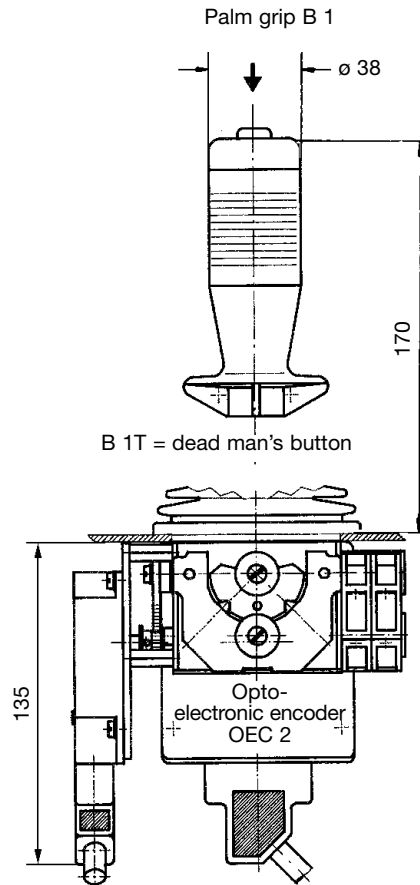
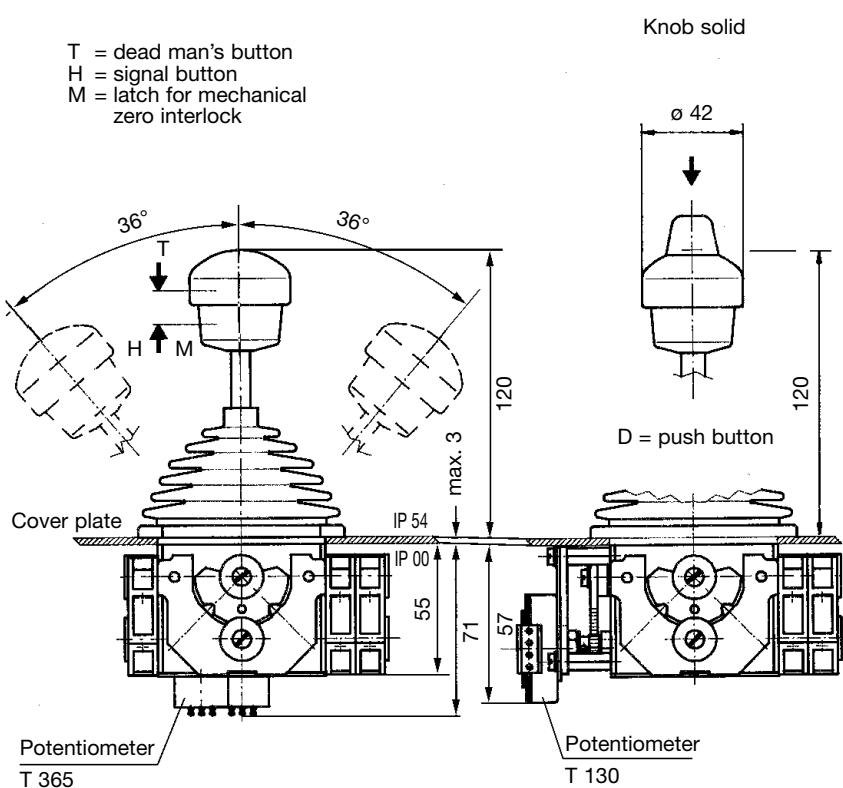
Spindle block with schematic representation of the master controller installation and deflection directions.
Version shown for left-hand side installation left (right-hand side installation is mirror image).



Pos.	V 11.1	V 11		Weight gramm	Part No. 5110...	Type	Price EURO		
1				400		V 11.1			
2									
3						500		V 11	
4									
5									
10	Gate cross-shaped	(prohibits diagonal shifting)		60		P			
11	Gate special-shaped	(for e. H-gate)		60		P			
12	Spring return in 0-position	(for each direction)		25		Z			
13	Friction brake adjustable	(for each direction)		20		R			
14									
20	Control-handle with knob solid								
21	Control-handle with latch for mechanical zero interlock			50		M			
22	Control-handle with dead man's button 1 NO			100		T			
23	Control-handle with signal button 1 NO			100		H			
24	Control-handle with push button 1 NO			110		D			
25	Control-handle with flat push button 1 NO			110		DV			
26	Control-handle with palm grip B 1			40		B 1			
27	Control-handle with palm grip B 1 with push button top 1 NO			60		B 1T			
28	Control-handle long or short 140, 100 mm								
29	More knobs, grips and T-grips with and without signal devices look catalog 1/280...								
30	Masterswitch switching sequence 4-0-4		No. of contacts 2	70		01			
31			4	130		02			
32	Direction 1-2 and 3-4 each 1 masterswitch		6	190		03			
33	Switching program according contact-arrangement MS... look catalog 5/001 or to your contact-arrangement								
34									
35									
36									
40	Potentiometer e.t.c. each masterswitch with mounted Conductive-plastic potentiometer T 365, with centre tap linear Life 10 ⁷ switching cycles resistance 2 x 5 kOhm, 0,5 Watt wiper current max. 1 mA			70		P			
41	Prepared for mounting potentiometer shaft 6 mm adjusting-angle 2 x 150°					(P)			
42	Prepared for mounting potentiometer e.t.c. adjusting-angle variable.					(P)			
43	more Potentiometer e.t.c. look catalog 1/240...								
50	Plastic housing I 160 x 240, masterswitch max. size 03			800		I			
51									
52	More housing look catalog 1/350								
60	Indicating labels not engraved with 2 or 4 arrows								
61	Engraved each 10 characters								
62									
70	Command and indicating devices look catalog 1/360								



T = dead man's button
H = signal button
M = latch for mechanical zero interlock

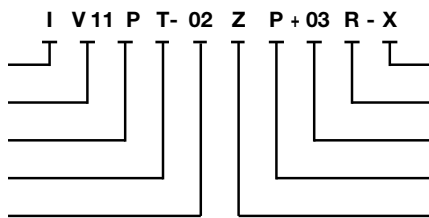


Type	No. of contacts	Dimension B
01	2	51
02	4	64
03	6	76

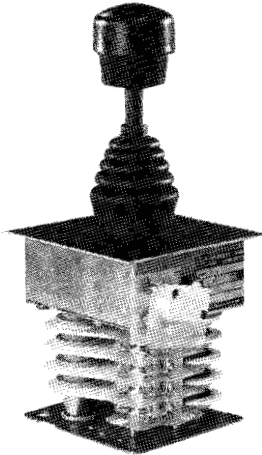
Hole pattern

Example for type-sign

- Plastic housing
- Multi-axis controller
- Gate
- Dead man's button
- Masterswitch direction 1-2



- Special please to describe
- Friction brake direction 3-4
- Masterswitch direction 3-4
- Potentiometer e.t.c. direction 1-2
- Spring return direction 1-2



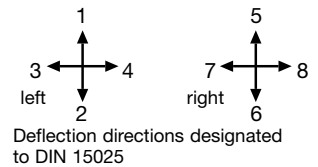
The multi-axis controller V 5 is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for hoisting applications. The modular design enables the switching device to be used universally. The V 5 is resistant to oil, maritime climate, ozone and UV radiation.

Contact complement 2 A 250 V AC 15 res. 3 A 24 V DC 13

Mechanical life 6 million (operating cycles)
Permissible ambient temperature Operation -40° C to +60° C
Storage -50° C to +80° C

Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection front IP 54 IEC 529 DIN 40050
Technical data look catalog 5/100
Description data look catalog 5/002

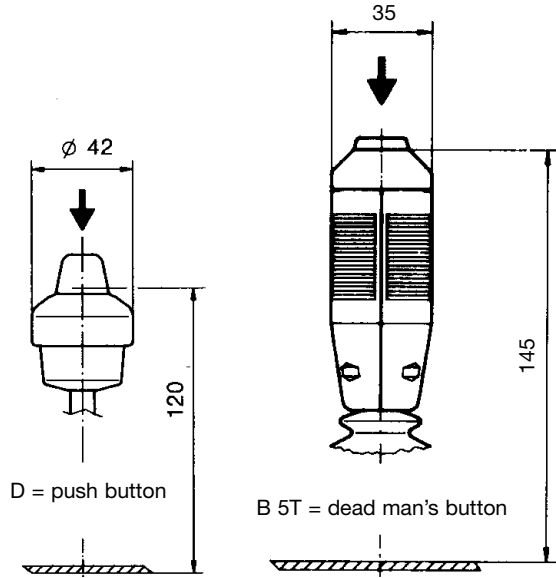
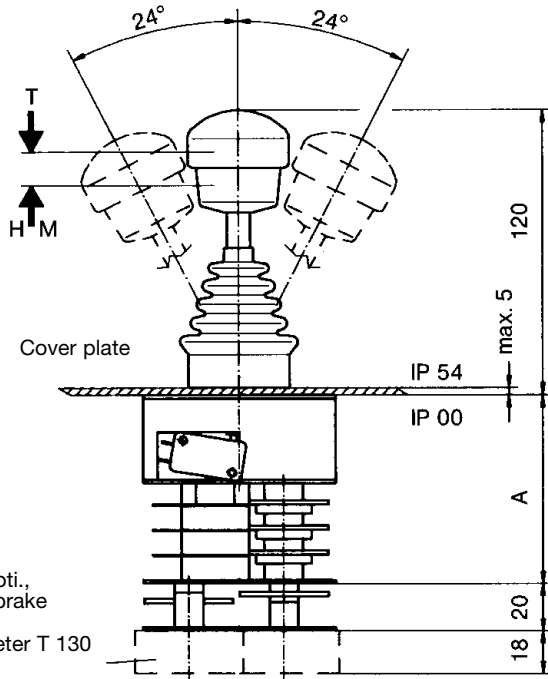
Spindle block with schematic representation of the master controller installation and deflection directions. Version shown for left-hand side installation (right-hand side installation is mirror image).



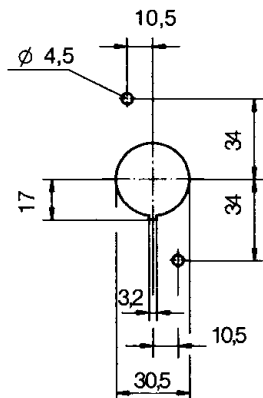
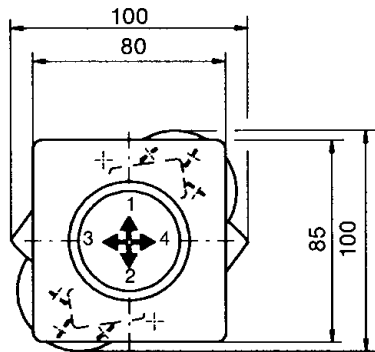
Pos.	V 51	V 5		Weight gramm	Part No. 5120...	Type	Price EURO
1				400		V 51	
2							
3				500		V 5	
4							
5							
10	Gate cross-shaped	(prohibits diagonal shifting)		50		P	
11	Gate special-shaped	(for e. H-gate)		50		P	
12	Spring return in 0-position	(for each direction)		25		Z	
13	Friction brake adjustable	(for each direction)		30		R	
14							
20	Control-handle with knob solid						
21	Control-handle with latch for mechanical zero interlock			50		M	
22	Control-handle with dead man's button 1 NO			50		T	
23	Control-handle with signal button 1 NO			50		H	
24	Control-handle with push button 1 NO			60		D	
25	Control-handle with flat push button 1 NO			60		DV	
26	Control-handle with palm grip B 5			40		B 5	
27	Control-handle with palm grip B 5 with push button top 1 NO			60		B 5T	
28	Control-handle long or short 140, 100 mm						
29	More knobs, grips and T-grips with and without signal devices look catalog 1/280...						
30	Masterswitch switching sequence 3-0-3		No. of contacts 1	150		1	
31			2	160		2	
32	Direction 1-2 and 3-4 each 1 masterswitch		3	170		3	
33	Switching program according contact-arrangement MS... look catalog 5/001 or to your contact-arrangement		4	180		4	
34			5	190		5	
35			6	200		6	
36	Switching sequence 4-0-4						
37	Micro changeover contact (MZT 1) positive opening (additional price)		1				
40	Potentiometer e.t.c. each masterswitch with mounted Wire-wound potentiometer T 130, with centre tap linear Life 10 ⁷ switching cycles resistance 2 x 0,5/1/2/5/10 kOhm, 1,5 Watt wiper current max. 10 mA			70		P	
41	Prepared for mounting potentiometer shaft 6 mm adjusting-angle 2 x 150°					(P)	
42	Prepared for mounting potentiometer e.t.c. adjusting-angle variable.					(P)	
43	more Potentiometer e.t.c. look catalog 1/240...						
50	Plastic housing I 120 x 160, masterswitch max. size 6			600		I	
51							
52	More housing look catalog 1/350						
60	Indicating labels not engraved with 2 or 4 arrows						
61	Engraved each 10 characters						
62							
70	Command and indicating devices look catalog 1/360						



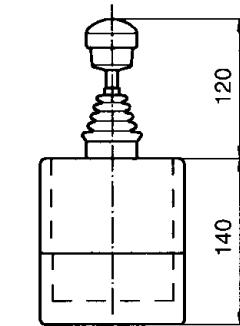
T = dead man's button
H = signal button
M = latch for mechanical zero interlock



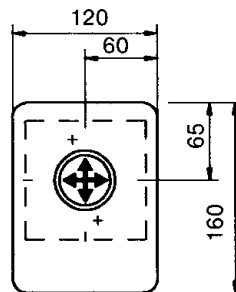
Type	No. of contacts	Dimension A
1	1	58
2	2	69
3	3	79
4	4	90
5	5	100
6	6	111



Hole pattern



Plastic housing



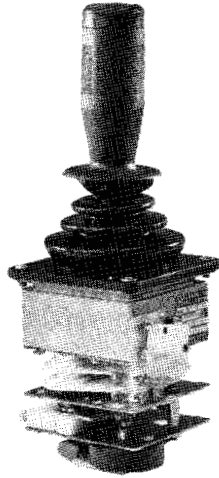
Example for type-sign

- Plastic housing
- Multi-axis controller
- Gate
- Dead man's button
- Masterswitch direction 1-2

I V 5 P T - 3 Z P + 4 R - X



- Special please to describe
- Friction brake direction 3-4
- Masterswitch direction 3-4
- Potentiometer e.t.c. direction 1-2
- Spring return direction 1-2



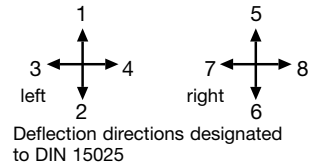
The multi-axis controller VV 5 is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for electro-hydraulic applications. The modular design enables the switching device to be used universally. The VV 5 is resistant to oil, maritime climate, ozone and UV radiation.

Contact complement 2 A 250 V AC 15 res. 3 A 24 V DC 13

Mechanical life 10 million (operating cycles)
Permissible ambient temperature Operation -40° C to +60° C
Storage -50° C to +80° C

Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection front IP 54 IEC 529 DIN 40050
Technical data look catalog 5/100
Description data look catalog 5/002

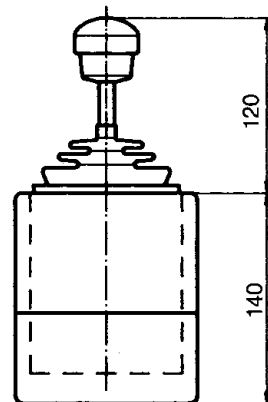
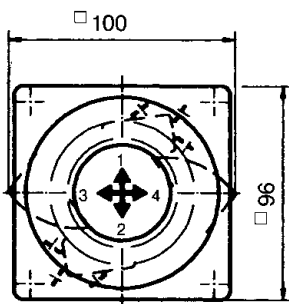
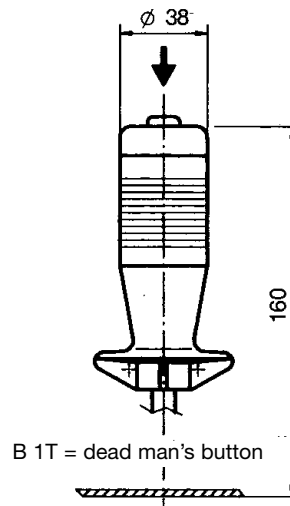
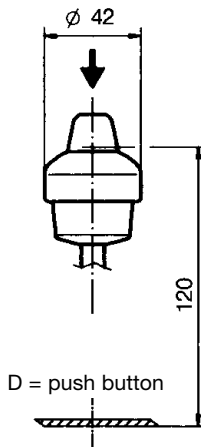
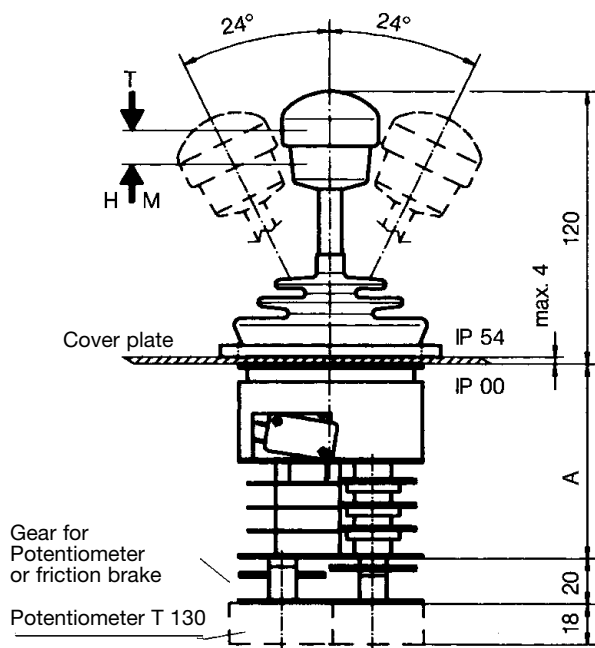
Spindle block with schematic representation of the master controller installation and deflection directions.
Version shown for left-hand side installation (right-hand side installation is mirror image).



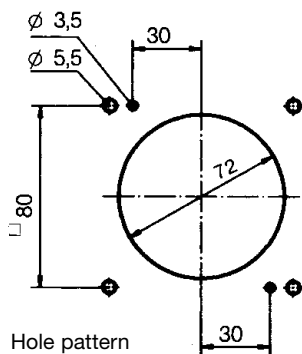
Pos.	VV 51	VV 5		Weight gramm	Part No. 5122...	Type	Price EURO
1				500		VV 51	
2							
3				600		VV 5	
4							
5							
10	Gate cross-shaped	(prohibits diagonal shifting)		60		P	
11	Gate special-shaped	(for e. H-gate)		60		P	
12	Spring return in 0-position	(for each direction)		25		Z	
13	Friction brake adjustable	(for each direction)		30		R	
14							
20	Control-handle with knob solid						
21	Control-handle with latch for mechanical zero interlock			50		M	
22	Control-handle with dead man's button 1 NO			100		T	
23	Control-handle with signal button 1 NO			100		H	
24	Control-handle with push button 1 NO			110		D	
25	Control-handle with flat push button 1 NO			110		DV	
26	Control-handle with palm grip B 1			40		B 1	
27	Control-handle with palm grip B 1 with push button top 1 NO			60		B 1T	
28	Control-handle long or short 140, 100 mm						
29	More knobs, grips and T-grips with and without signal devices look catalog 1/280...						
30	Masterswitch switching sequence 3-0-3		No. of contacts 1	150		1	
31			2	160		2	
32	Direction 1-2 and 3-4 each 1 masterswitch		3	170		3	
33	Switching program according contact-arrangement MS... look catalog 5/001 or to your contact-arrangement		4	180		4	
34			5	190		5	
35			6	200		6	
36	Switching sequence 4-0-4						
40	Potentiometer e.t.c. each masterswitch with mounted Wire-wound potentiometer T 130, with centre tap linear Life 10 ⁷ switching cycles resistance 2 x 0,5/1/2/5/10 kOhm, 1,5 Watt wiper current max. 10 mA			70		P	
41	Prepared for mounting potentiometer shaft 6 mm adjusting-angle 2 x 150°					(P)	
42	Prepared for mounting potentiometer e.t.c. adjusting-angle variable.					(P)	
43	more Potentiometer e.t.c. look catalog 1/240...						
50	Plastic housing I 120 x 160, masterswitch max. size 4			600		I	
51							
52	More housing look catalog 1/350						
60	Indicating labels not engraved with 2 or 4 arrows						
61	Engraved each 10 characters						
62							
70	Command and indicating devices look catalog 1/360						



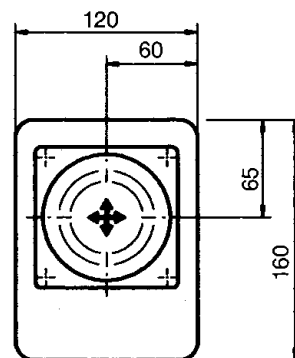
T = dead man's button
H = signal button
M = latch for mechanical zero interlock



Plastic housing



Type	No. of contacts	Dimension A
1	1	66
2	2	77
3	3	87
4	4	98
5	5	108
6	6	119



Example for type-sign

- Plastic housing
- Multi-axis controller left
- Gate
- Dead man's button
- Masterswitch direction 1-2

I VV5 P T - 3 Z P + 4 R - X



- Special please to describe
- Friction brake direction 3-4
- Masterswitch direction 3-4
- Potentiometer e.t.c. direction 1-2
- Spring return direction 1-2



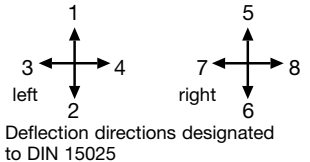
The multi-axis controller V 8 is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for electro-hydraulic applications. The modular design enables the switching device to be used universally. The V 8 is resistant to oil, maritime climate, ozone and UV radiation.

Contact complement 0,5 A 110 V AC 15 res. 1,5 A 24 V DC 13
I min > 0,2 mA 2 V DC 12 Gold plated for max. load of 0,12 Watt (standard)
or I max < 300 mA 0,4 V DC 12 max. capacity 0,12 Watt do not exceed!
I min > 0,2 mA 2 V DC 12 max. contact reliability for very low current (special)

Mechanical life V 8 10 million (operating cycles)
 Mechanical life VV 8 12 million (operating cycles)
 Permissible ambient temperature Operation -40° C to +60° C
 Storage -50° C to +80° C
 Climate resistance
 Damp heat constant DIN IEC 68 part 2-3
 Damp heat cyclic DIN IEC 68 part 2-30
 Degree of protection front IP 54 IEC 529 DIN 40050
 Technical data look catalog 5/100
 Description data look catalog 5/002

Spindle block with schematic representation of the master controller installation and deflection directions.

Version shown for left-hand side installation (right-hand side installation is mirror image).



Pos.	V 81	V 8		Weight gramm	Part No. 513...	Type	Price EURO
1				800		V 81	
2				800		VV 81	
3				900		V 8	
4				900		VV 8	
5							
10	Gate cross-shaped	(prohibits diagonal shifting)		60		P	
11	Gate special-shaped	(for e. H-gate)		60		P	
12	Spring return in 0-position	(for each direction)		30		Z	
13	Friction brake adjustable	(for each direction)		30		R	
14							
20	Control-handle with knob solid						
21	Control-handle with latch for mechanical zero interlock			50		M	
22	Control-handle with dead man's button 1 NO			100		T	
23	Control-handle with signal button 1 NO			100		H	
24	Control-handle with push button 1 NO			110		D	
25	Control-handle with flat push button 1 NO			110		DV	
26	Control-handle with palm grip B 1			40		B 1	
27	Control-handle with palm grip B 1 with push button top 1 NO			60		B 1T	
28	Control-handle long or short 180, 140 mm						
29	More knobs, grips and T-grips with and without signal devices look catalog 1/280...						
30	Masterswitch switching sequence -0-		No. of contacts 1	20		1	
31			2	40		2	
32	Direction 1-2 and 3-4 each 1 masterswitch		3	60		3	
33	Switching program according contact-arrangement MS... look catalog 5/001						
34	or to your contact-arrangement						
35							
36	Switching sequence 3-0-3						
40	Potentiometer e.t.c. each masterswitch with mounted Conductive-plastic potentiometer T 301, with centre tap linear Life 10 ⁷ switching cycles resistance 2 x 5 kOhm, 0,5 Watt wiper current max. 1 mA			70		P	
41	Prepared for mounting potentiometer shaft 6 mm adjusting-angle 2 x 120°					(P)	
42	Prepared for mounting potentiometer e.t.c. adjusting-angle variable.					(P)	
43	more Potentiometer e.t.c. look catalog 1/240...						
45	Electronic (Amplifier, Profi-Bus, CAN-Bus) look catalog 3/510/...						
50	Cover housing			300		B	
51	Filter plug M 20 for air-condition			20			
52	Cable entry M 20 with anti-kink protection and strain relief			30			
53	Plug in socket 14-pole female insert CPC 17 unwired			150			
54	Connector 14-pole male insert CPC 17 unwired			150			
55	Wiring plug in socket or connector each wired-connection						
60	Indicating labels not engraved with 2 or 4 arrows						
61	Engraved each 10 characters						

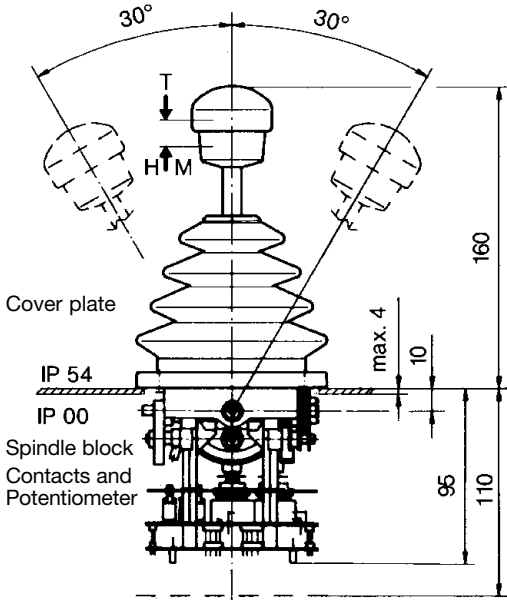


T = dead man's button
H = signal button
M = latch for mechanical zero interlock

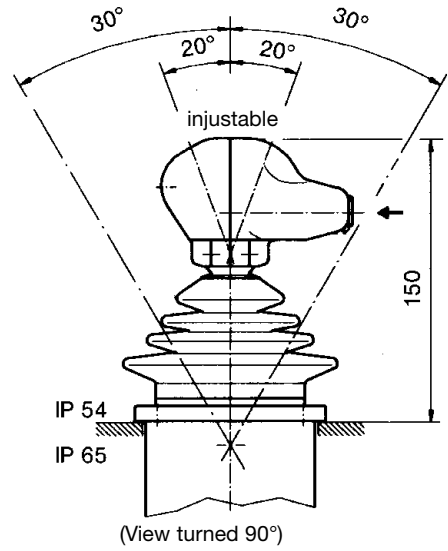
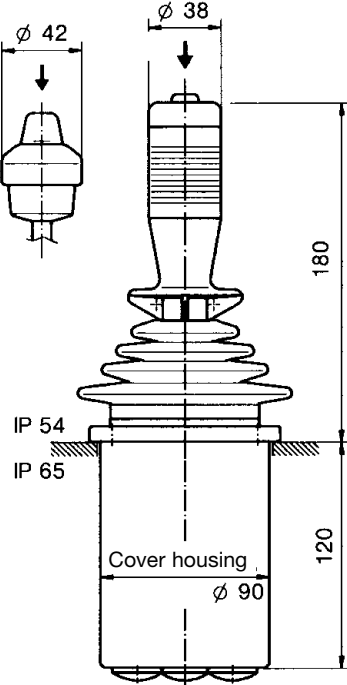
Knob solid
D = -push button

Palm grip B 1
B 1T = dead man's button
look catalog 1/284

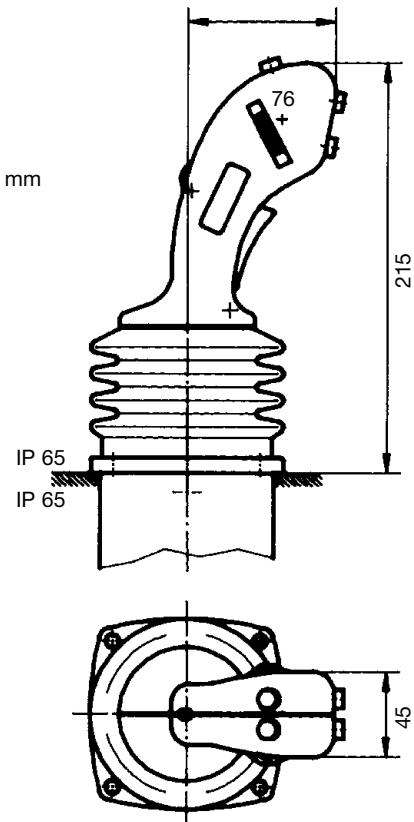
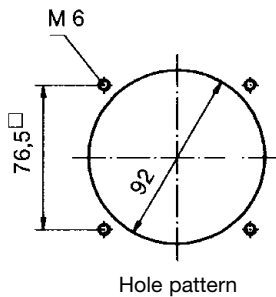
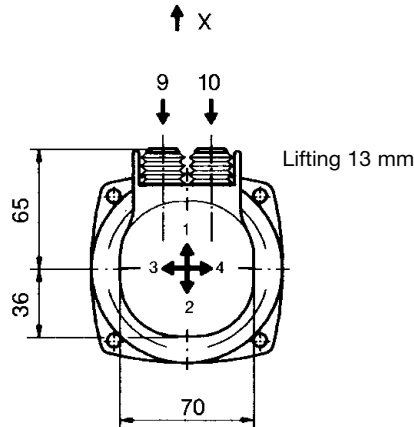
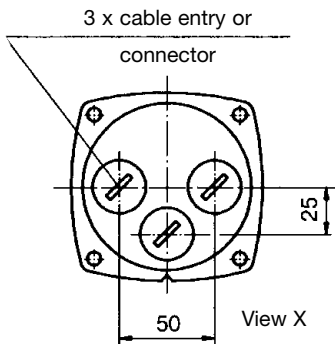
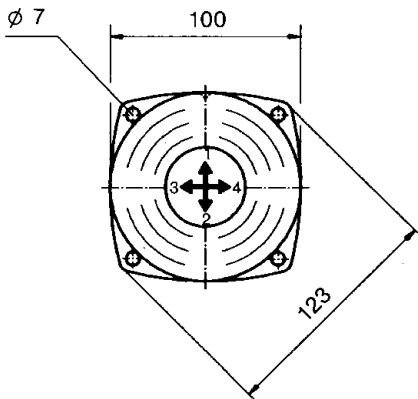
Palm grip B 2
for the 3. direction 9-10
look catalog 1/285



Expanse for impedance-converter and board with solder-, plug-, or screw terminal

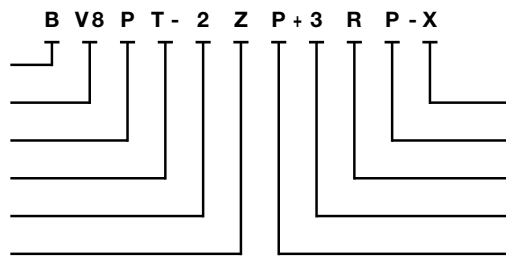


Palm grip B 3
look catalog 1/286
for the 3. direction 11-12
for the 4. direction 13-14



Example for type-sign

- Cover housing
- Multi-axis controller
- Gate
- Dead man's button
- Masterswitch direction 1-2
- Spring return direction 1-2



- Special please to describe
- Potentiometer e.t.c. direction 3-4
- Friction brake direction 3-4
- Masterswitch direction 3-4
- Potentiometer e.t.c. direction 1-2



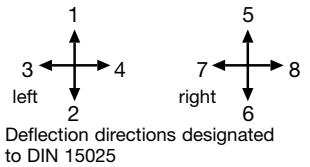
The multi-axis controller V 10 is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for remote control and electro-hydraulic applications. The V 10 is resistant to oil, maritime climate, ozone and UV radiation.

Contact complement 0,5 A 110 V AC 15 res. 1,5 A 24 V DC 13
I min > 0,2 mA 2 V DC 12 Gold plated for max. load of 0,12 Watt (standard)
or I max < 300 mA 0,4 V DC 12 max. capacity 0,12 Watt do not exceed!
I min > 0,2 mA 2 V DC 12 max. contact reliability for very low current (special)

Mechanical life 6 million (operating cycles)
 Permissible ambient temperature Operation -40° C to +60° C
 Storage -50° C to +80° C

Climate resistance
 Damp heat constant DIN IEC 68 part 2-3
 Damp heat cyclic DIN IEC 68 part 2-30
 Degree of protection front IP 54 IEC 529 DIN 40050
 Technical data look catalog 5/100
 Description data look catalog 5/002

Spindle block with schematic representation of the master controller installation and deflection directions. Version shown for left-hand side installation (right-hand side installation is mirror image).

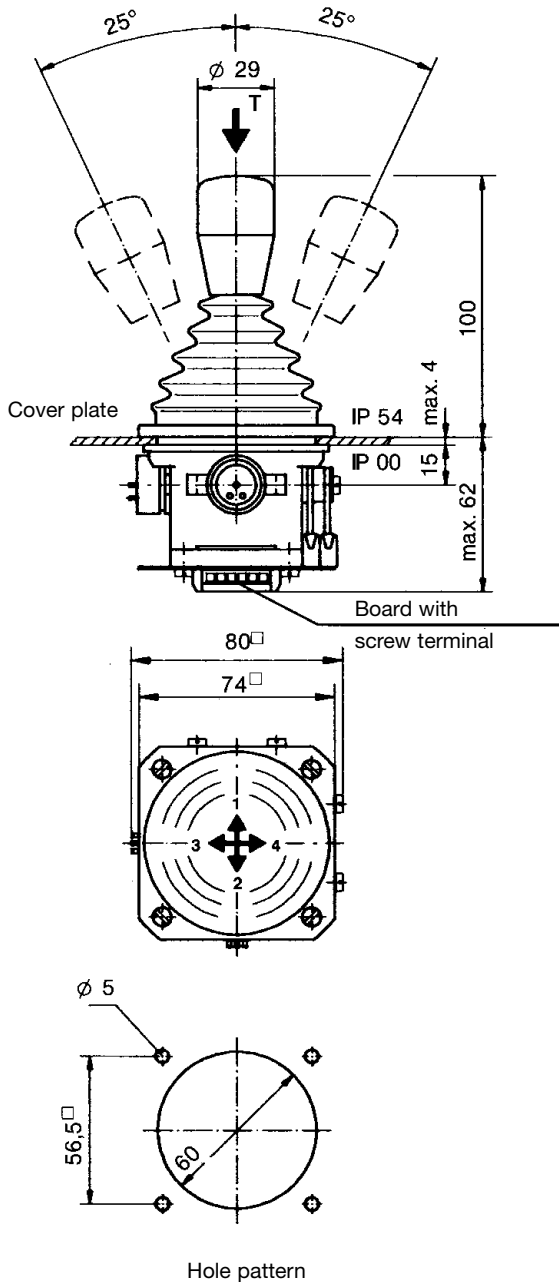


Pos.	V 10.1	V 10		Weight gramm	Part No. 5140...	Type	Price EURO	
1				200		V 10.1		
2								
3					250		V 10	
4								
5								
10	Gate cross-shaped	(prohibits diagonal shifting)		20		P		
11	Gate special-shaped	(for e. H-gate)		20		P		
12	Spring return in 0-position	(include in the spindle block)				Z		
13	Friction brake	(for each direction)				R		
14								
20	Control-handle with knob solid							
21	Control-handle with latch for mechanical zero interlock			50		M		
22	Control-handle with dead man's button 1 NO			80		T		
23								
24								
25								
26	Control-handle with palm grip B 5			40		B 5		
27	Control-handle with palm grip B 5 with push button top 1 NO			60		B 5D		
28								
29	More knobs, grips and T-grips with and without signal devices look catalog 1/280...							
30	Masterswitch without switching sequence		No. of contacts 2	20		01		
31			4	40		02		
32	Direction 1-2 and 3-4 each 1 masterswitch		6	60		03		
33	Switching program according contact-arrangement MS... look catalog 5/001 or to your contact-arrangement							
34								
35								
36	Switching sequence 4-0-4							
40	Potentiometer e.t.c. each masterswitch with mounted Conductive-plastic potentiometer T 320, with centre tap linear Life 10 ⁷ switching cycles resistance 2 x 5 kOhm, 0,5 Watt wiper current max. 1 mA			20		P		
41								
42								
43	more Potentiometer e.t.c. look catalog 1/240...							
45	Electronic (Amplifier, Profi-Bus, CAN-Bus) look catalog 3/510/...							
50	Plastic housing I 122 x 120			350		I		
51								
52	More housing look catalog 1/350							
60	Indicating labels not engraved with 2 or 4 arrows							
61	Engraved each 10 characters							
62								
70	Command and indicating devices look catalog 1/360							

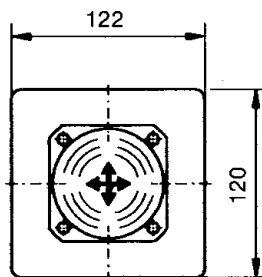
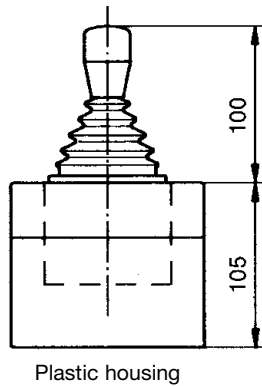
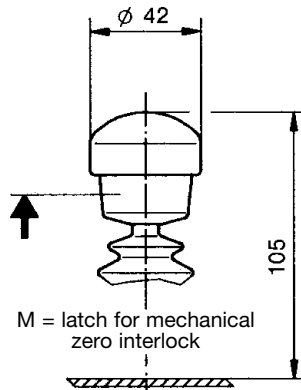


Knob solid

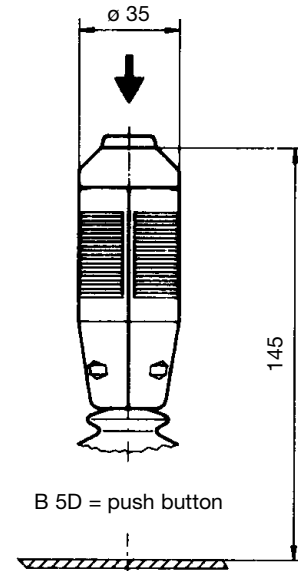
T = dead man's button



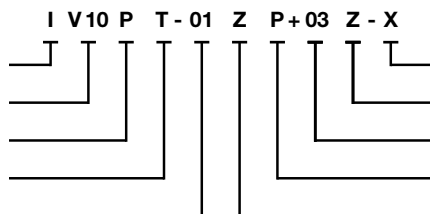
Ball grip



Palm grip B 5



- Example for type-sign
- Plastic housing
- Multi-axis controller
- Gate
- Dead man's button
- Masterswitch direction 1-2



- Special please to describe
- Spring return direction 3-4
- Masterswitch direction 3-4
- Potentiometer e.t.c. direction 1-2
- Spring return direction 1-2



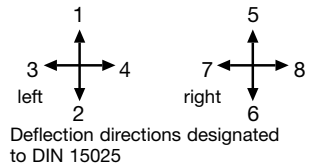
The multi-axis controller V 14 is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for remote control and hoisting applications.
The V 14 is resistant to oil, maritime climate, ozone and UV radiation.

Contact complement 2 A 250 V AC 15 res. 1 A 24 V DC 13

Mechanical life 6 million (operating cycles)
Permissible ambient temperature Operation -40° C to +60° C
Storage -50° C to +80° C

Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection front IP 65 IEC 529 DIN 40050
Description data look catalog 5/002

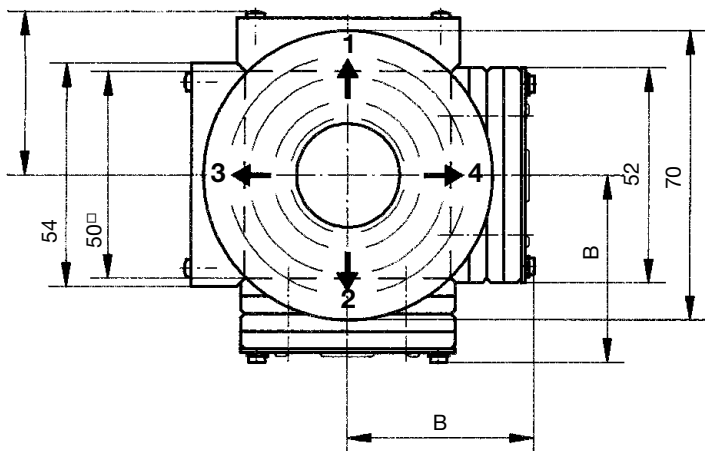
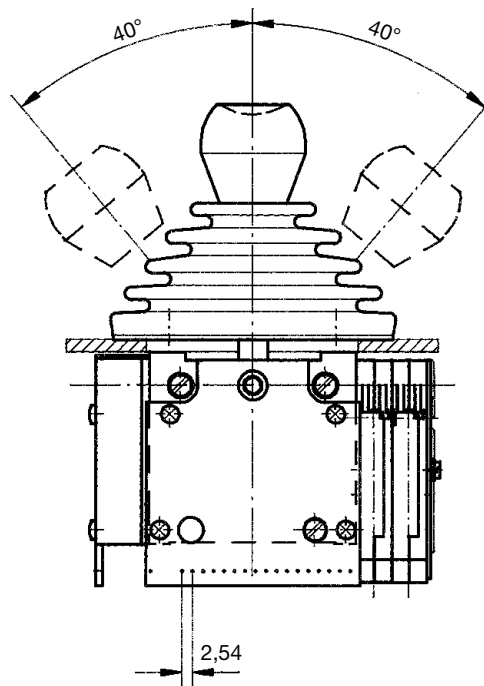
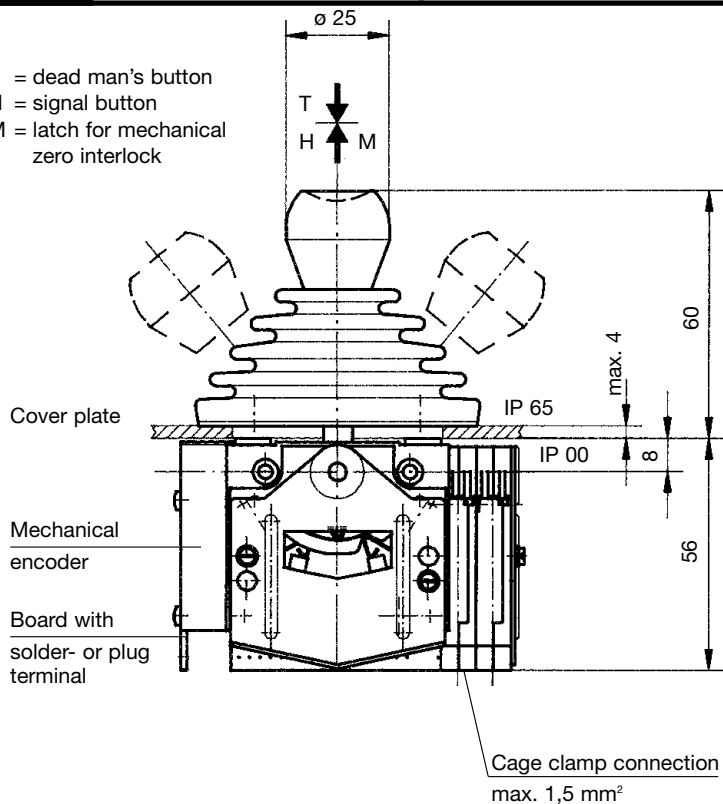
Spindle block with schematic representation of the master controller installation and deflection directions.
Version shown for left-hand side installation (right-hand side installation is mirror image).



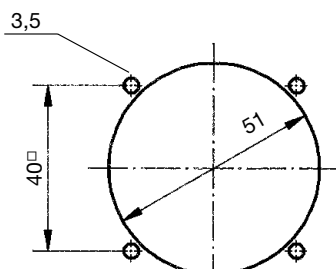
Pos.	V 14.1	V 14		Weight gramm	Part No. 5142...	Type	Price EURO	
1				175		V 14.1		
2								
3					200		V 14	
4								
5								
10	Gate cross-shaped	(prohibits diagonal shifting)		20		P		
11	Gate special-shaped	(for e. H-gate)		20		P		
12	Spring return in 0-position	(include in the spindle block)				Z		
13	Friction brake	(for each direction)				R		
14								
20	Control-handle with knob solid							
21	Control-handle with latch for mechanical zero interlock			50		M		
22	Control-handle with dead man's button 1 NO			80		T		
23	Control-handle with signal button 1 NO			80		H		
24								
25								
26								
27								
28	Control-handle long 80 mm							
29								
30	Masterswitch switching sequence 4-0-4 adjustable (with encoder 6-0-6)		No. of contacts 2	70		01		
31			4	130		02		
32	Direction 1-2 and 3-4 each 1 masterswitch		6	190		03		
33	Switching program according contact-arrangement MS... look catalog 5/001							
34	or to your contact-arrangement							
35								
36								
44	Mechanical encoder with mounted direction 1-2 and 3-4 each 1 encoder life 5 x 10 ⁶ switching cycles, 0,5 Watt wiper current max. 1 mA Mechanical encoder MEC 1-2 male connector EA/02-10 contact-arrangement MS 26-0 look catalog 5/001 Conductive-plastic potentiometer with centre tap linear resistance 2 x 10 kOhm		C61	30		C		
45	Mechanical encoder MEC 1-7 male connector EA / 10-10 contact-arrangement MS 26-0-1 look catalog 5/001 Conductive-plastic potentiometer with centre tap linear resistance 2 x 5 kOhm		C62	20		C		
46	Mechanical encoder MEC 1-6 male connector EA / 09-10, 6 Bit Gray-Code		C63	30		C		
47	Mechanical encoder MEC 1-6-5 male connector ER / 36-10 Power supply 24 V DC, output power impressed 4-20 mA		C64	30		C		
48	Mechanical encoder MEC 1-6-8 male connector ER / 36-10 Power supply 24 V DC, output power impressed 0-20 mA		C65	30		C		
52	Housing look catalog 1/350							
60	Indicating labels not engraved with 2 or 4 arrows							
61	Engraved each 10 characters							
70	Command and indicating devices look catalog 1/360							



T = dead man's button
H = signal button
M = latch for mechanical zero interlock



Type	No. of contacts	Dimen. B
01	2	36
02	4	45
03	6	54



Hole pattern

Example for type-sign

Multi-axis controller

Gate

Dead man's button

Masterswitch direction 1-2

Spring return direction 1-2

V 14 P T -01 Z C + 01 Z C - X



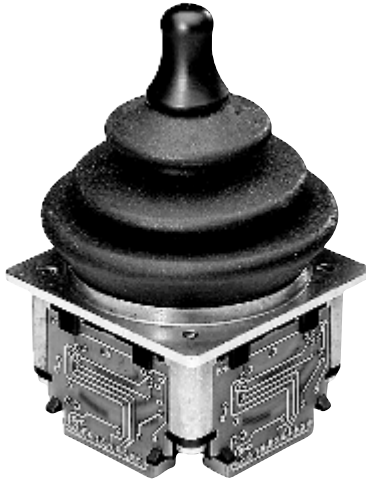
Special please to describe

Mechanical encoder MEC direction 3-4

Spring return direction 3-4

Masterswitch direction 3-4

Mechanical encoder MEC direction 1-2



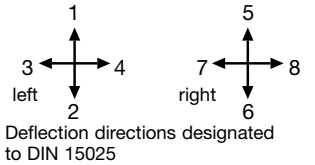
The multi-axis controller V 20 is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for remote control and other applications.
The V 20 is resistant to oil, maritime climate, ozone and UV radiation.

Mechanical life 3 million (operating cycles)
Permissible ambient temperature Operation -30° C to +70° C
Storage -50° C to +80° C

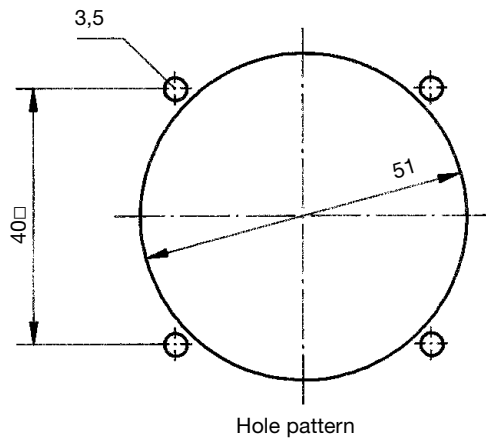
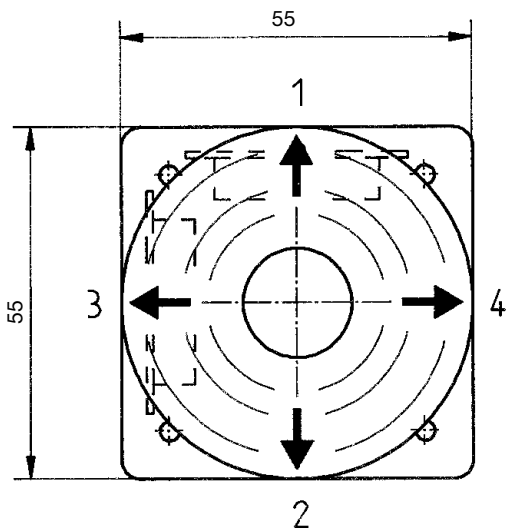
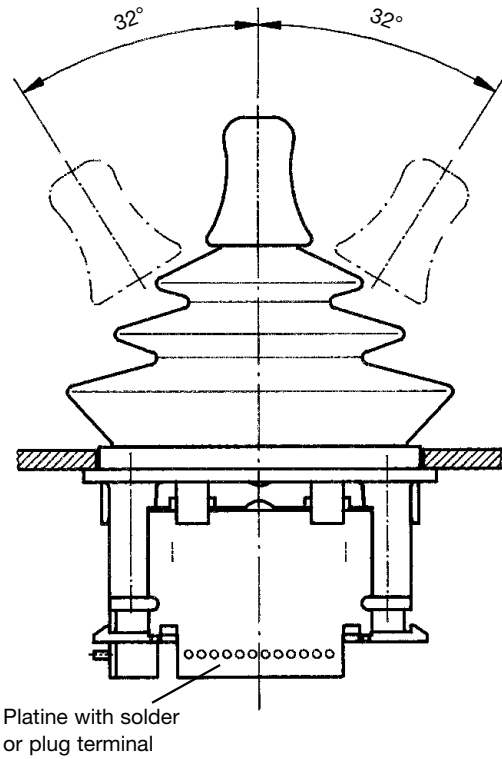
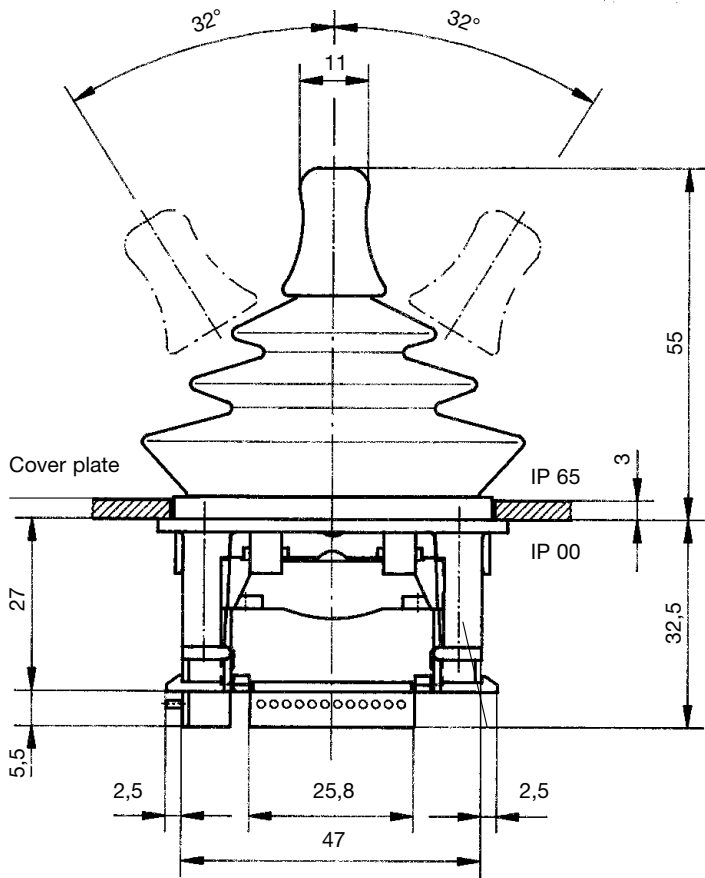
Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection front IP 65 IEC 529 DIN 40050

Description data look catalog 5/002

Spindle block with schematic representation of the master controller installation and deflection directions.
Version shown for left-hand side installation (right-hand side installation is mirror image).



Pos.	V 20.1	V 20		Weight gramm	Part No. 5144...	Type	Price EURO	
1				80		V 20.1		
2								
3					90		V 20	
4								
5								
9			Gate open-shaped	for open shifting switching sequence 1-0-1 to 3-0-3				
10	Gate cross-shaped	(prohibits diagonal shifting)				P		
11	Gate special-shaped	(for e. H-gate)				P		
12	Spring return in 0-position	(include in the spindle block)				Z		
13								
14								
20	Control-handle with knob solid							
21								
22								
23								
24								
25								
30	without switching sequence							
34								
35								
36	switching sequence 4-0-4							
44	Mechanical encoder with mounted direction 1-2 and 3-4 each 1 encoder life 3 x 10 ⁶ switching cycles 0,5 Watt wiper current max. 1 mA		C70	15		C		
45	Mechanical encoder MEC 2-2 male connector EA / 11-10 contact-arrangement MS 24-0 look catalog 5/001 Conductive-plastic potentiometer with centre tap linear resistance 2 x 5 kOhm		C71	15		C		
52	Housing look catalog 1/350							
60	Indicating labels not engraved with 2 or 4 arrows							
61	Engraved each 10 characters							
70	Command and indicating devices look catalog 1/360							



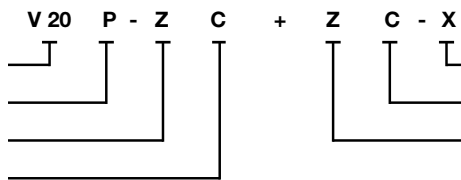
Example for type-sign

Multi-axis controller

Gate

Spring return direction 1-2

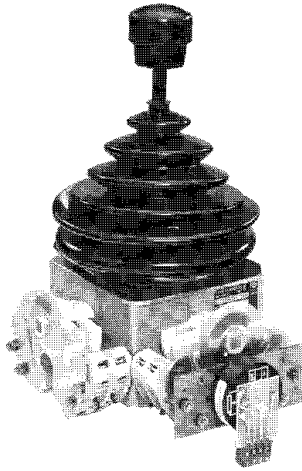
Mechanical encoder direction 1-2



Special please to describe

Mechanical encoder direction 3-4

Spring return direction 3-4



The multi-axis controller V 3 is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for hoisting applications. The modular design enables the switching device to be used universally. The V 3 is resistant to oil, maritime climate, ozone and UV radiation.

Contact complement 4 A 250 V AC 15 res. 1 A 24 V DC 13

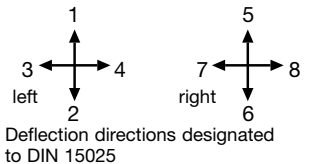
Mechanical life 6 million (operating cycles)
Permissible ambient temperature Operation -40° C to +60° C
Storage -50° C to +80° C

Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection front IP 54 IEC 529 DIN 40050

Technical data look catalog 5/100
Description data look catalog 5/002

Spindle block with schematic representation of the master controller installation and deflection directions.

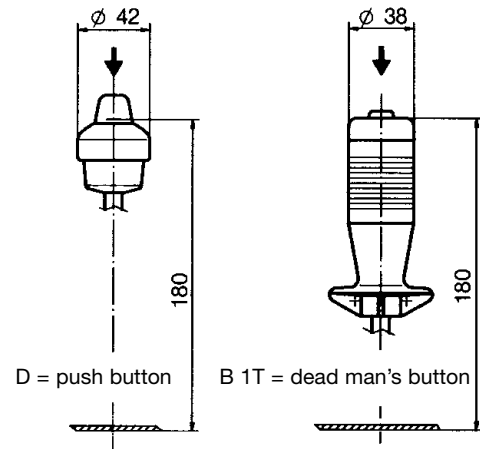
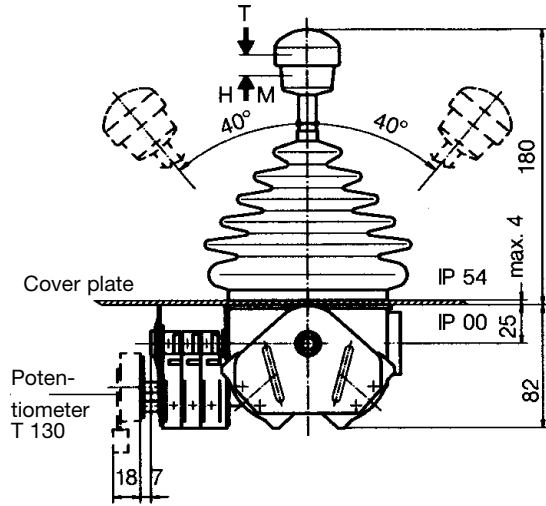
Version shown for left-hand side installation (right-hand side installation is mirror image).



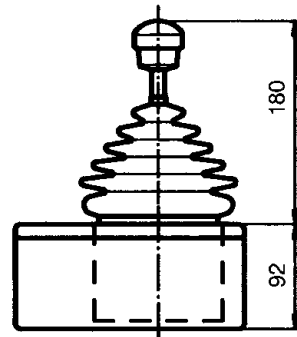
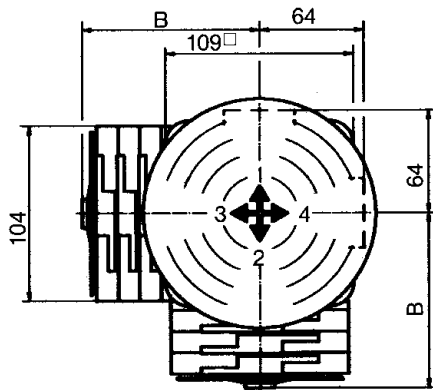
Pos.	V 31	V 3		Weight gramm	Part No. 5150...	Type	Price EURO		
1				940		V 31			
2									
3						1000		V 3	
4									
5									
10	Gate cross-shaped	(prohibits diagonal shifting)		100		P			
11	Gate special-shaped	(for e. H-gate)		110		P			
12	Spring return in 0-position	(for each direction)		110		Z			
13	Friction brake adjustable	(for each direction)		50		R			
14									
20	Control-handle with knob solid								
21	Control-handle with latch for mechanical zero interlock			50		M			
22	Control-handle with dead man's button 1 NO			100		T			
23	Control-handle with signal button 1 NO			100		H			
24	Control-handle with push button 1 NO			110		D			
25	Control-handle with flat push button 1 NO			110		DV			
26	Control-handle with palm grip B 1			40		B 1			
27	Control-handle with palm grip B 1 with push button top 1 NO			60		B 1T			
28	Control-handle long or short 200, 160 mm								
29	More knobs, grips and T-grips with and without signal devices look catalog 1/280...								
30	Masterswitch switching sequence 4-0-4		No. of contacts 2	290		01			
31			4	350		02			
32	Direction 1-2 and 3-4 each 1 masterswitch		6	410		03			
33	Switching program according contact-arrangement MS... look catalog 5/001		8	470		04			
34	or to your contact-arrangement		10	530		05			
35			12	590		06			
36	Switching sequence 5-0-5								
40	Potentiometer e.t.c. each masterswitch with mounted Wire-wound potentiometer T 130, with centre tap linear Life 10 ⁷ switching cycles resistance 2 x 0,5/1/2/5/10 kOhm, 1,5 Watt wiper current max. 10 mA			70		P			
41	Prepared for mounting potentiometer shaft 6 mm adjusting-angle 2 x 150°					(P)			
42	Prepared for mounting potentiometer e.t.c. adjusting-angle variable.					(P)			
43	more Potentiometer e.t.c. look catalog 1/240...								
50	Steel sheet housing B 200 masterswitch max. size 04			1300		B			
51	Steel sheet housing B 230 masterswitch max. size 06			1400		B			
52	More housing look catalog 1/350								
60	Indicating labels not engraved with 2 or 4 arrows								
61	Engraved each 10 characters								
62									
70	Command and indicating devices look catalog 1/360								



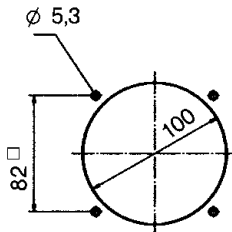
T = dead man's button
H = signal button
M = latch for mechanical zero interlock



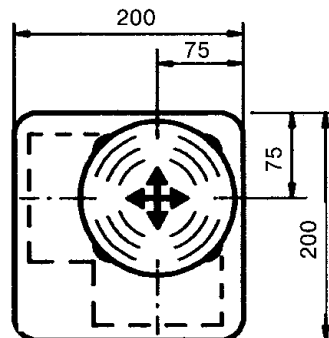
Type	No. of contacts	Dimension B
01	2	77
02	4	89
03	6	102
04	8	114
05	10	127
06	12	139



Steel sheet housing

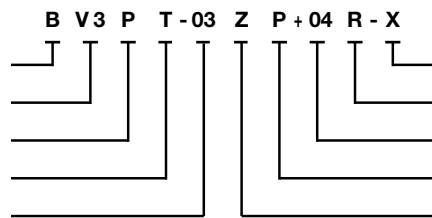


Hole pattern

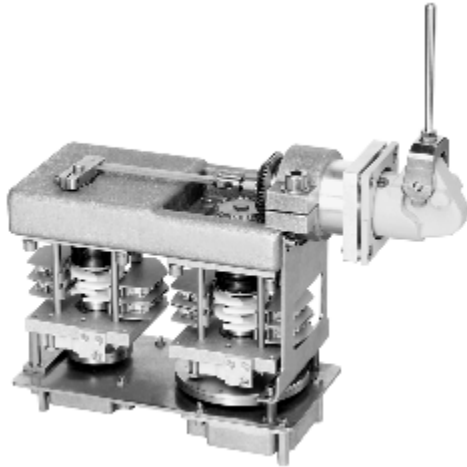


Example for type-sign

- Steel sheet housing
- Multi-axis controller
- Gate
- Dead man's button
- Masterswitch direction 1-2



- Special please to describe
- Friction brake direction 3-4
- Masterswitch direction 3-4
- Potentiometer e.t.c. direction 1-2
- Spring return direction 1-2



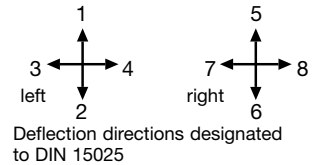
The multi-axis controller V 18 is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for hoisting applications. The modular design enables the switching device to be used universally. The V 18 is resistant to oil, maritime climate, ozone and UV radiation. The modular micro changeover contacts are positive opening to VDE 0113.

Contact complement 2 A 250 V AC 15 res. 3 A 24 V DC 13

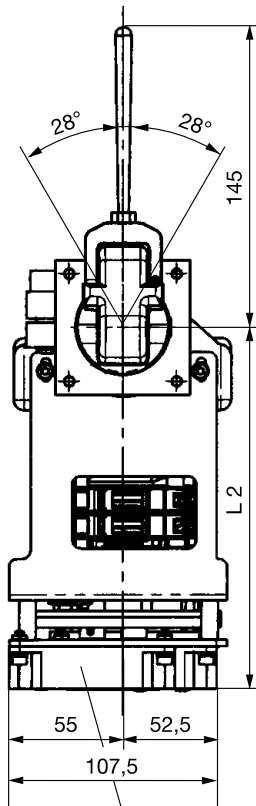
Mechanical life 20 million (operating cycles)
Permissible ambient temperature Operation -40° C to +60° C
Storage -50° C to +80° C

Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection front IP 54 IEC 529 DIN 40050
Technical data look catalog 5/100
Description data look catalog 5/002

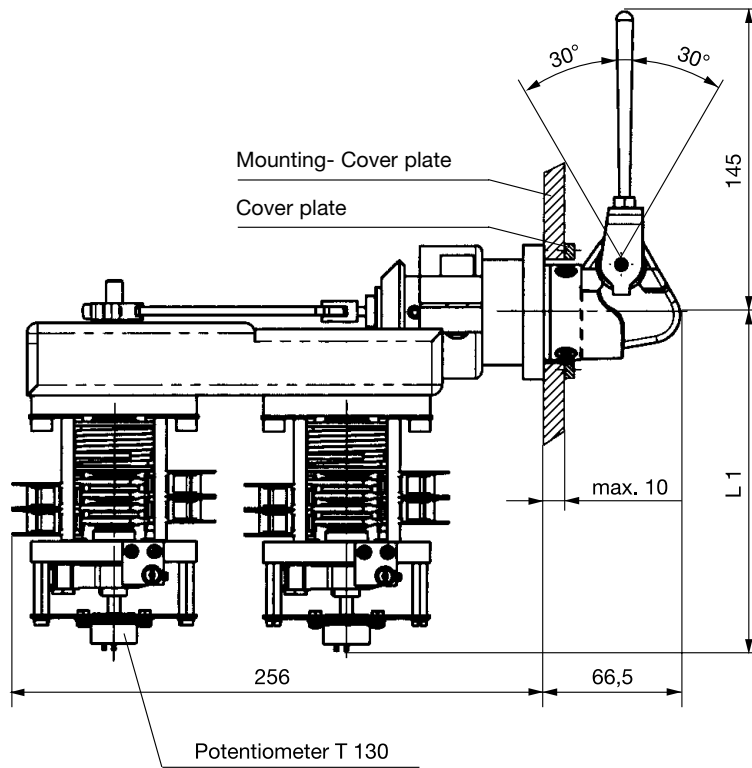
Spindle block with schematic representation of the master controller installation and deflection directions.
Version shown for left-hand side installation (right-hand side installation is mirror image).



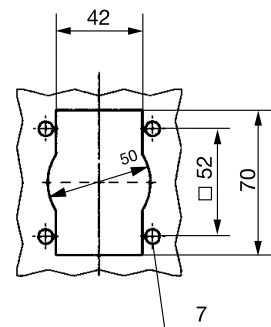
Pos.	V 181	V 18		Weight gramm	Part No. 5152...	Type	Price EURO
1				2800		V 181	
2							
3				3500		V 18	
4							
5							
10							
11							
12	Spring return in 0-position	(for each direction)		110		Z	
13	Friction brake adjustable	(for each direction)		30		R	
14							
20	Control-handle						
21							
22							
23							
24							
25							
26							
27							
28							
29							
30	Masterswitch switching sequence 2-0-2		No. of contacts 2	290		01	
31			4	350		02	
32	Direction 1-2 and 3-4 each 1 masterswitch		6	410		03	
33	Switching program according contact-arrangement MS... look catalog 5/001						
34	or to your contact-arrangement						
35							
36							
37							
40	Potentiometer e.t.c. each masterswitch with mounted Wire-wound potentiometer T 130, with centre tap linear Life 10 ⁷ switching cycles resistance 2 x 0,5/1/2/5/10 kOhm, 1,5 Watt wiper current max. 10 mA			70		P	
41	Prepared for mounting potentiometer shaft 6 mm adjusting-angle 2 x 150°			300		(P)	
42	Prepared for mounting potentiometer e.t.c. adjusting-angle variable.			300		(P)	
43	more Potentiometer e.t.c. look catalog 1/240...						
50							
51							
52							
60	Indicating labels not engraved with 2 or 4 arrows						
61	Engraved each 10 characters						
62							
70							



Opto-electronic encoder OEC 2



Type	No. of contacts	Dimension L1	Dimension L2
01	2	151,0	163,0
02	4	163,5	175,5
03	6	176,0	188,0



Hole pattern

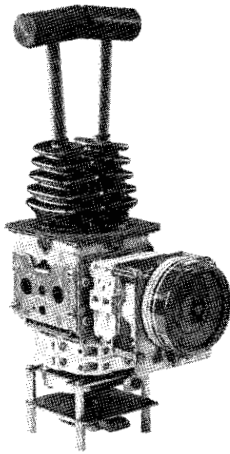
Example for type-sign

- Multi-axis controller
- Masterswitch direction 1-2
- Spring return direction 1-2
- Potentiometer e.t.c. direction 1-2

V 18 - 02 Z P+02 R C - X



- Special please to describe
- Encoder direction 3-4
- Friction brake direction 3-4
- Masterswitch direction 3-4



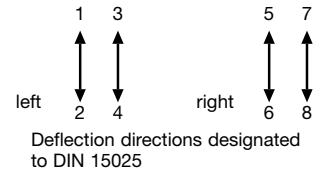
The double-handle controller is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for hoisting applications. The modular design enables the switching device to be used universally. The D 64 is resistant to oil, maritime climate, ozone and UV radiation.

**Contact complement 2 A 250 V AC 15 res. 1 A 24 V DC 13 (standard)
or 4 A 250 V AC 15 (special)**

Mechanical life D 64 10 million (operating cycles)
Mechanical life DD 64 20 million (operating cycles)
Permissible ambient temperature Operation -40° C to +60° C
Storage -50° C to +80° C

Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection front IP 54 IEC 529 DIN 40050
Technical data look catalog 5/100
Description data look catalog 5/002

Spindle block with schematic representation of the master controller installation and deflection directions.
Version shown for left-hand side installation (right-hand side installation is mirror image).



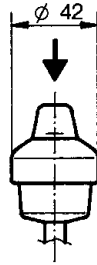
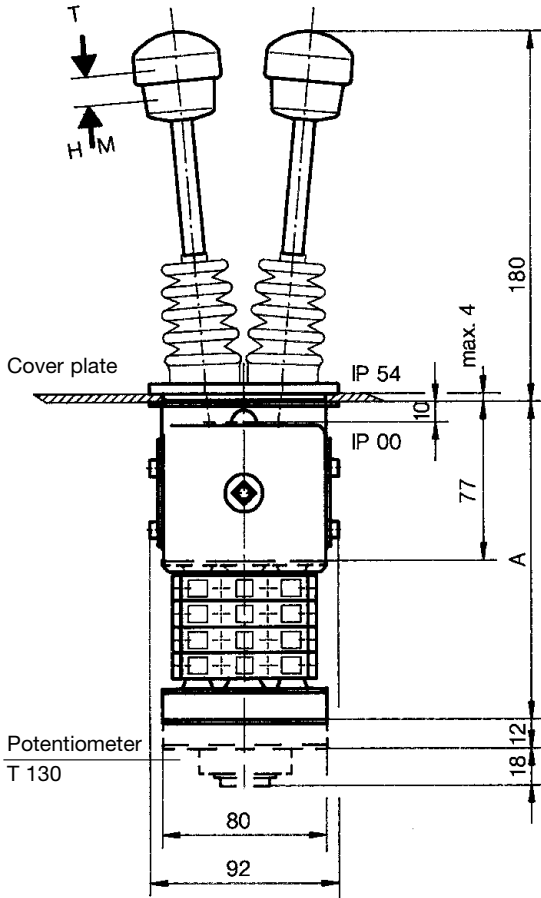
Pos.	D 64	DD 64		Weight gramm	Part No. 5160...	Type	Price EURO	
1								
2								
3					1100		D 64	
4					1100		DD64	
5								
10								
11								
12	Spring return in 0-position	(for each direction)		110		Z		
13	Friction brake adjustable	(for each direction)		30		R		
14								
20	Control-handle with knob solid		(for each direction					
21	Control-handle with latch for mechanical zero interlock		for Pos. 20-28)	50		M		
22	Control-handle with dead man's button 1 NO			100		T		
23	Control-handle with signal button 1 NO			100		H		
24	Control-handle with push button 1 NO			110		D		
25	Control-handle with flat push button 1 NO			110		DV		
26	Control-handle with T-grip			40		Q		
27	Control-handle with T-grip and push button side 1 NO			60		QD		
28	Control-handle long or short 160, 200 mm							
29	More knobs, grips and T-grips with and without signal devices look catalog 1/280...							
30	Masterswitch switching sequence 4-0-4		No. of contacts 2	290		01		
31			4	350		02		
32	Direction 1-2 and 3-4 each 1 masterswitch		6	410		03		
33	Switching program according contact-arrangement MS... look catalog 5/001		8	470		04		
34	or to your contact-arrangement		10	530		05		
35			12	590		06		
36	Switching sequence 5-0-5 or 6-0-6							
40	Potentiometer e.t.c. each masterswitch with mounted Wire-wound potentiometer T 130, with centre tap linear Life 10 ⁷ switching cycles resistance 2 x 0,5/1/2/5/10 kOhm, 1,5 Watt wiper current max. 10 mA			70		P		
41	Prepared for mounting potentiometer shaft 6 mm adjusting-angle 2 x 150°					(P)		
42	Prepared for mounting potentiometer e.t.c. adjusting-angle variable.					(P)		
43	more Potentiometer e.t.c. look catalog 1/240...							
50								
51								
52	More housing look catalog 1/350							
60	Indicating labels not engraved with 2 or 4 arrows							
61	Engraved each 10 characters							
62								
70	Command and indicating devices look catalog 1/360							



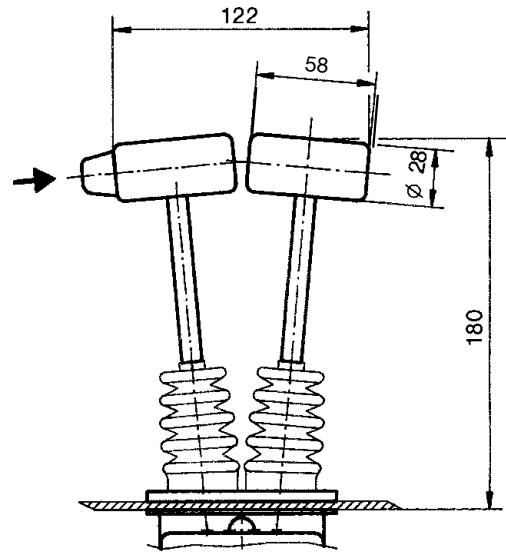
T = dead man's button
H = signal button
M = latch for mechanical zero interlock

Knob solid
D = -push button

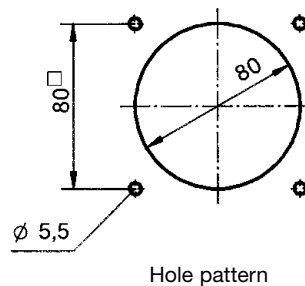
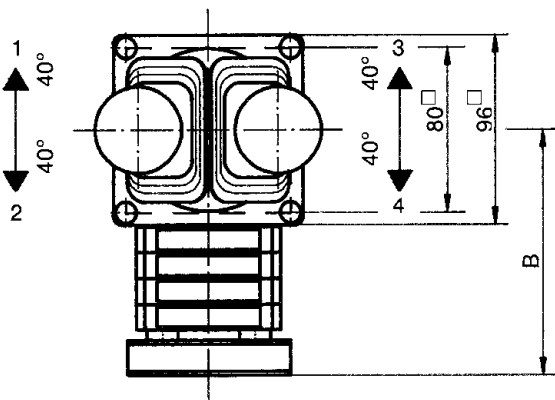
T-grip
D = -push button



To build in:
direction 1-2
direction 3-4



Type	No. of contacts	Dimension A	Dimension B
01	2	119	82
02	4	131	94
03	6	144	107
04	8	156	119
05	10	169	132
06	12	181	144



Example for type-sign

Double-handle controller

T-grip with push button direction 1-2

T-grip direction 3-4

Masterswitch direction 1-2

Spring return direction 1-2

D 64 QD Q - 03 Z + 02 R P - X

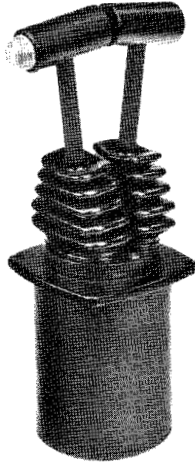


Special please to describe

Potentiometer e.t.c. direction 3-4

Spring return direction 3-4

Masterswitch direction 3-4



The double-handle controller D 8 is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for electro-hydraulic applications. The modular design enables the switching device to be used universally. The D 8 is resistant to oil, maritime climate, ozone and UV radiation.

Contact complement 0,5 A 110 V AC 15 res. 1,5 A 24 V DC 13
I min > 0,2 mA 2 V DC 12 Gold plated for max. load of 0,12 Watt (standard)
or I max < 300 mA 0,4 V DC 12 max. capacity 0,12 Watt do not exceed!
I min > 0,2 mA 2 V DC 12 max. contact reliability for very low current (special)

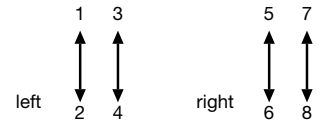
Mechanical life 8 million (operating cycles)
 Permissible ambient temperature Operation -40° C to +60° C
 Storage -50° C to +80° C

Climate resistance
 Damp heat constant DIN IEC 68 part 2-3
 Damp heat cyclic DIN IEC 68 part 2-30
 Degree of protection front IP 54 IEC 529 DIN 40050

Technical data look catalog 5/100
 Description data look catalog 5/002

Spindle block with schematic representation of the master controller installation and deflection directions.

Version shown for left-hand side installation (right-hand side installation is mirror image).



Deflection directions designated to DIN 15025

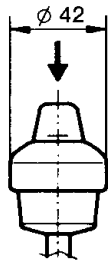
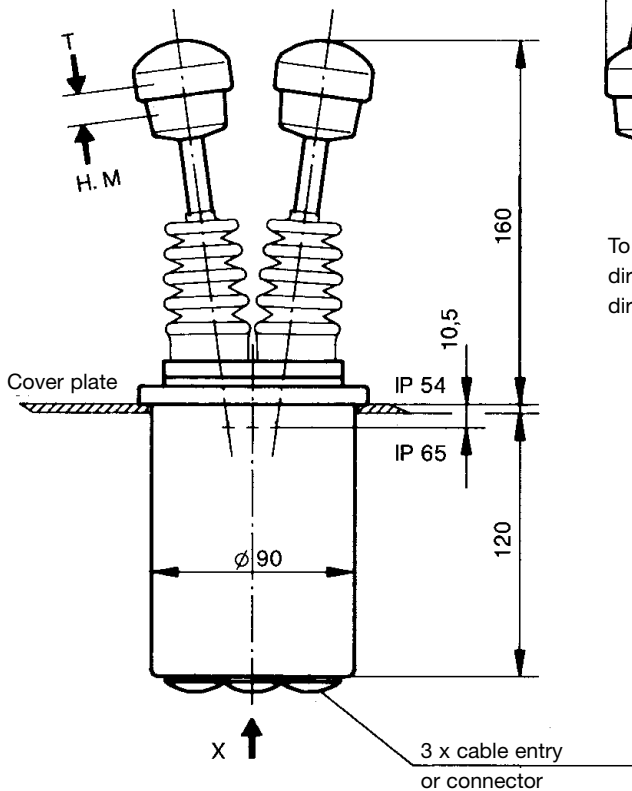
Pos.	D 8	Weight gramm	Part No. 5162...	Type	Price EURO	
1						
2						
3		1000		D 8		
4						
5						
10						
11						
12	Spring return in 0-position (for each direction)	30		Z		
13	Friction brake adjustable (for each direction)	30		R		
14						
20	Control-handle with knob solid	(for each direction for Pos. 20-28)				
21	Control-handle with latch for mechanical zero interlock		50		M	
22	Control-handle with dead man's button 1 NO		100		T	
23	Control-handle with signal button 1 NO		100		H	
24	Control-handle with push button 1 NO		110		D	
25	Control-handle with flat push button 1 NO		110		DV	
26	Control-handle with T-grip		40		Q	
27	Control-handle with T-grip and push button side 1 NO		60		QD	
28	Control-handle long or short 180, 140 mm					
29	More knobs, grips and T-grips with and without signal devices look catalog 1/280...					
30	Masterswitch switching sequence -0-	No. of contacts 1	20		1	
31		2	40		2	
32	Direction 1-2 and 3-4 each 1 masterswitch	3	60		3	
33	Switching program according contact-arrangement MS... look catalog 5/001 or to your contact-arrangement					
34						
35						
36	Switching sequence 3-0-3					
40	Potentiometer e.t.c. each masterswitch with mounted Conductive-plastic potentiometer T 301, with centre tap linear Life 10 ⁷ switching cycles resistance 2 x 5 kOhm, 0,5 Watt wiper current max. 1 mA		70		P	
41	Prepared for mounting potentiometer shaft 6 mm adjusting-angle 2 x 120°				(P)	
42	Prepared for mounting potentiometer e.t.c. adjusting-angle variable.				(P)	
43	more Potentiometer e.t.c. look catalog 1/240...					
45	Electronic (Amplifier, Profi-Bus, CAN-Bus) look catalog 3/510/...					
50	Cover housing		300		B	
51	Filter plug M 20 for air-condition		20			
52	Cable entry M 20 with anti-kink protection and strain relief		30			
53	Plug in socket 14-pole female insert CPC 17 unwired		150			
54	Connector 14-pole male insert CPC 17 unwired		150			
55	Wiring plug in socket or connector each wired-connection					
60	Indicating labels not engraved with 2 or 4 arrows					
61	Engraved each 10 characters					



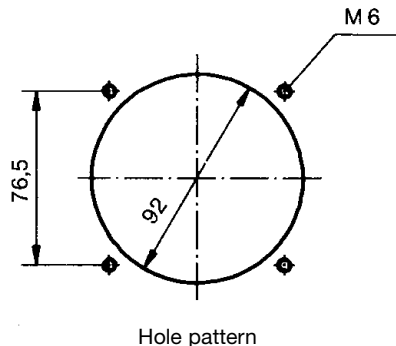
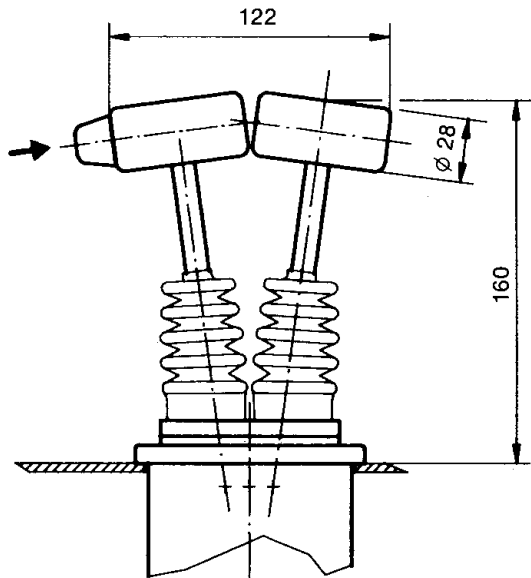
T = dead man's button
H = signal button
M = latch for mechanical zero interlock

Knob solid
D = push button

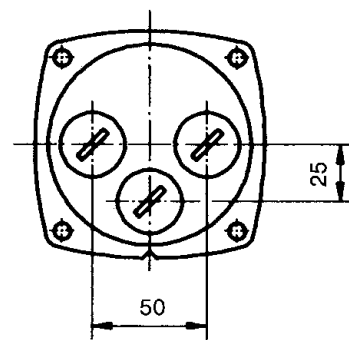
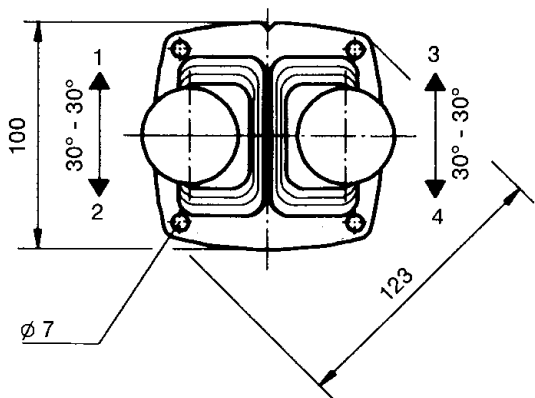
T-grip
D = push button



To build in:
direction 1-2
direction 3-4



Hole pattern



View x

Example for type-sign

Cover housing

Double-handle controller

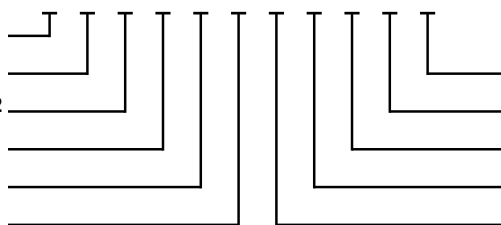
T-grip with push button direction 1-2

T-grip direction 3-4

Masterswitch direction 1-2

Spring return direction 1-2

B D8 QD Q - 2 Z P + 3 R P - X



Special please to describe

Potentiometer e.t.c. direction 3-4

Friction brake direction 3-4

Masterswitch direction 3-4

Potentiometer e.t.c. direction 1-2



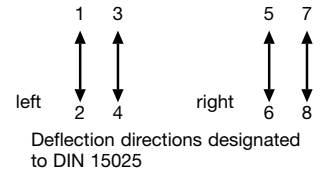
The double-handle controller D 3 is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for nautical navigation applications. The modular design enables the switching device to be used universally. The D 3 is resistant to oil, maritime climate, ozone and UV radiation.

Contact complement 0,5 A 110 V AC 15 res. 1,5 A 24 V DC 13
I min > 0,2 mA 2 V DC 12 Gold plated for max. load of 0,12 Watt (standard)
or I max < 300 mA 0,4 V DC 12 max. capacity 0,12 Watt do not exceed!
I min > 0,2 mA 2 V DC 12 max. contact reliability for very low current (special)

Mechanical life 12 million (operating cycles)
 Permissible ambient temperature Operation -40° C to +60° C
 Storage -50° C to +80° C

Climate resistance
 Damp heat constant DIN IEC 68 part 2-3
 Damp heat cyclic DIN IEC 68 part 2-30
 Degree of protection front IP 66 IEC 529 DIN 40050
 Technical data look catalog 5/100
 Description data look catalog 5/002

Spindle block with schematic representation of the master controller installation and deflection directions.
 Version shown for left-hand side installation (right-hand side installation is mirror image).



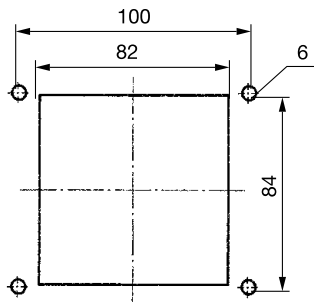
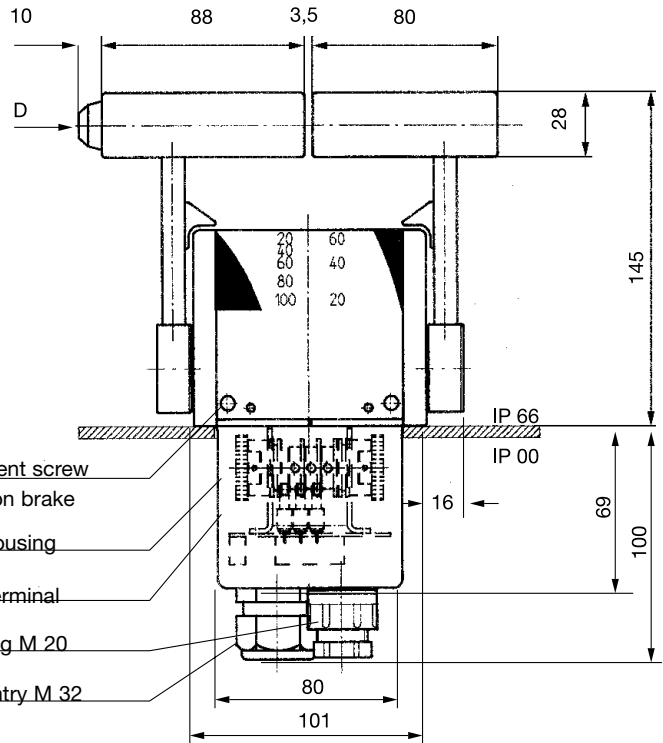
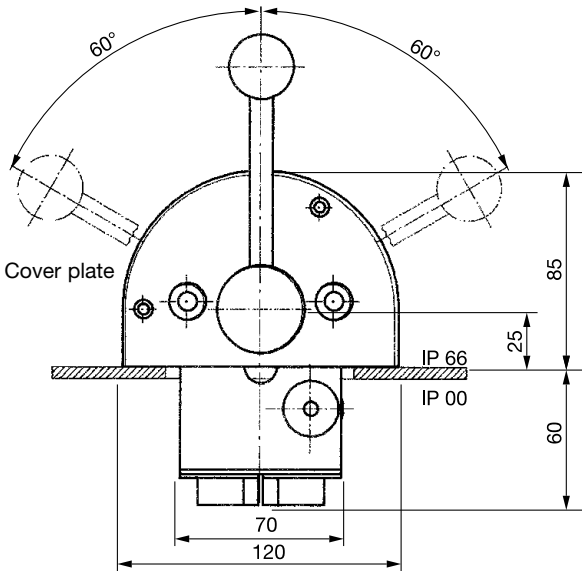
Pos.	D 3		Weight gramm	Part No. 5164...	Type	Price EURO
1						
2						
3			4000		D 3	
4						
5						
10						
11						
12	Spring return in 0-position	(only 1 direction)	30		Z	
13	Friction brake adjustable	(for each direction)	30		R	
14						
20	Control-handle with knob solid					
21						
22						
23						
24	Control-handle with push button	1 NO	110		D	
25						
26	Control-handle with T-grip		40		Q	
27	Control-handle with T-grip and push button side	1 NO	60		QD	
28	Control-handle long or short	180, 140 mm				
29						
30	Masterswitch switching sequence -0-					
31		No. of contacts 1	20		1	
32	Direction 1-2 and 3-4 each 1 masterswitch	2	40		2	
33	Switching program according contact-arrangement MS... look catalog 5/001 or to your contact-arrangement	3	60		3	
34						
35						
36	Switching sequence special					
40	Potentiometer e.t.c. each masterswitch with mounted Conductive-plastic potentiometer T 246, with centre tap linear Life 10 ⁷ switching cycles resistance 2 x 5 kOhm, 0,5 Watt wiper current max. 1 mA		70		P	
41	Prepared for mounting potentiometer shaft 6 mm adjusting-angle 2 x 75°				(P)	
42	Prepared for mounting potentiometer e.t.c. adjusting-angle variable.				(P)	
43	more Potentiometer e.t.c. look catalog 1/240...					
50	Cover housing		300		B	
51	Filter plug M 20 for air-condition		20			
52	Cable entry M 32 with anti-kink protection		30			
53						
54						
55						
56						
60	Indicating label eloxal aluminium plate silvery (include in the spindle block)					
61	Engraved each 10 characters					



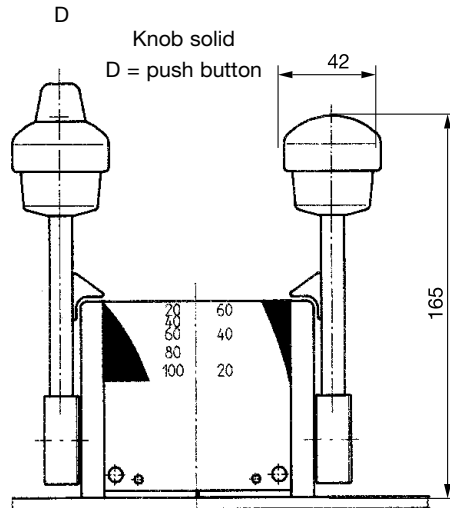
T-grip

D = push button

Direction 1-2 Direction 3-4



Hole pattern



Example for type-sign

Cover housing

Double-handle controller

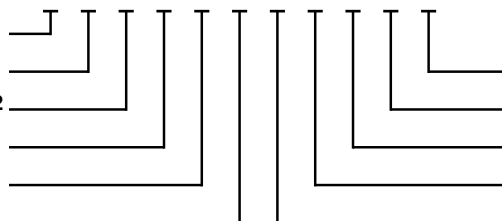
T-grip with push button direction 1-2

T-grip direction 3-4

Masterswitch direction 1-2

Friction brake direction 1-2

B D3 QD Q - 2 R P + 2 R P - X



Special please to describe

Potentiometer e.t.c. direction 3-4

Friction brake direction 3-4

Masterswitch direction 3-4

Potentiometer e.t.c. direction 1-2



The single-axis controller S 1 is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for remote control and electro-hydraulic applications. The S 1 is resistant to oil, maritime climate, ozone and UV radiation.

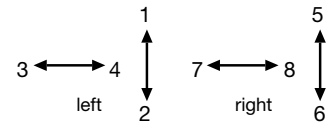
Contact complement dead man's button 2 A 250 V AC 15 res. 1 A 24 V DC 13

Mechanical life 6 million (operating cycles)
Permissible ambient temperature Operation -40° C to +60° C
Storage -50° C to +80° C

Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection front IP 65 IEC 529 DIN 40050

Technical data look catalog 5/100
Description data look catalog 5/002

Spindle block with schematic representation of the master controller installation and deflection directions. Version shown for left-hand side installation (right-hand side installation is mirror image).

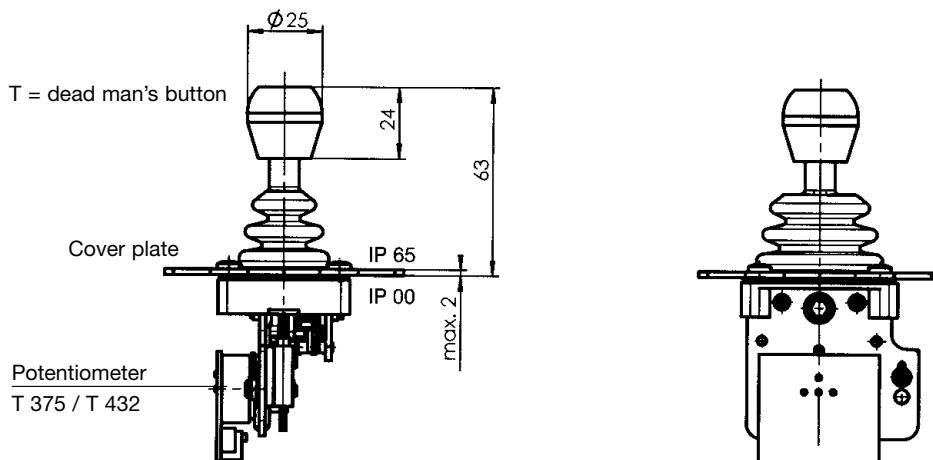


Deflection directions designated to DIN 15025

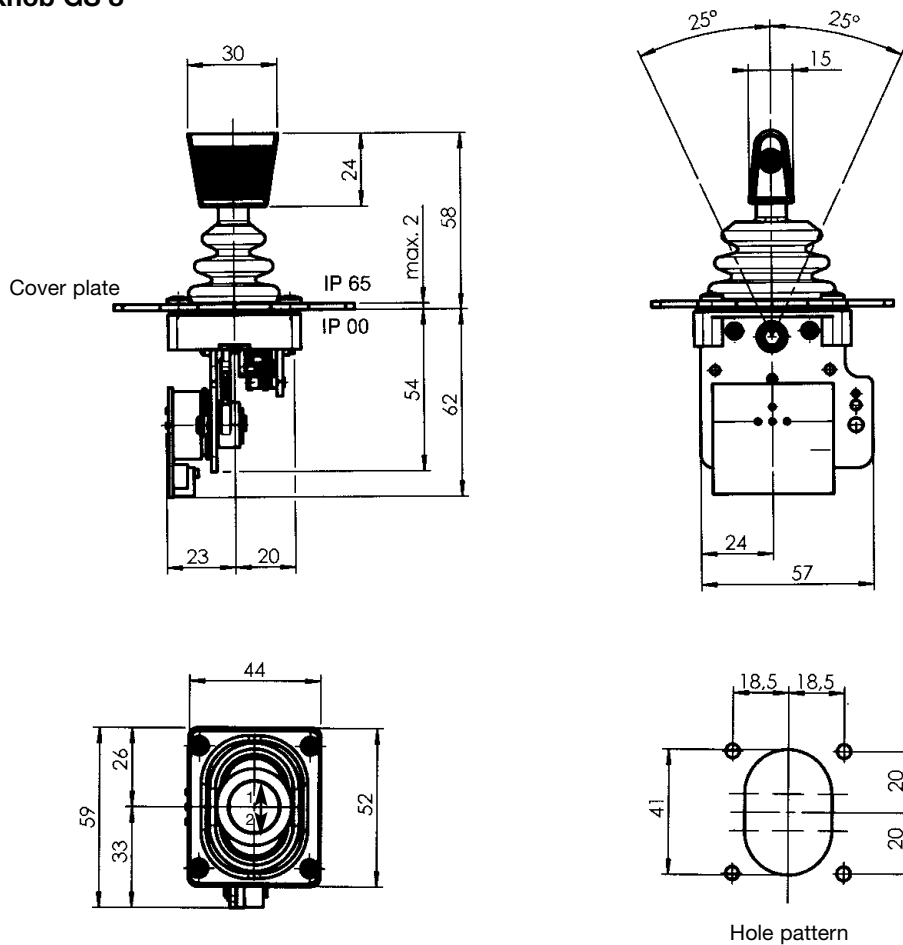
Pos.	S 1	Weight gramm	Part No. 5180...	Type	Price EURO
1		150		S 1	
2					
3					
4					
5					
10	Spring return in 0-position (include in the spindle block) Friction brake			Z R	
11					
12					
13					
14					
20	Control-handle with knob solid GK 4			M T	
21	Control-handle with latch for mechanical zero interlock	50			
22	Control-handle with dead man's button 1 NO	80			
23				GS 8	
24					
25					
26	Control-handle with knob GS 8				
27					
28					
29					
44	Potentiometer e.t.c. each masterswitch with mounted Conductive-plastic potentiometer T 375, with centre tap linear life 10 ⁷ switching cycles resistance 2 x 5 kOhm 0,5 Watt wiper current max. 1 mA	20		P	
45	Conductive-plastic potentiometer T 430 with centre tap linear life 10 ⁷ switching cycles resistance 2 x 5 kOhm 2 conductive-plastic-contact way arrangement MSP 21 (catalog 5/001) 0,5 Watt wiper current max. 1 mA	25		P	
52	Housing look catalog 1/350				
60	Indicating labels not engraved with 2 arrows				
61	Engraved each 10 characters				
70	Command and indicating devices look catalog 1/360				



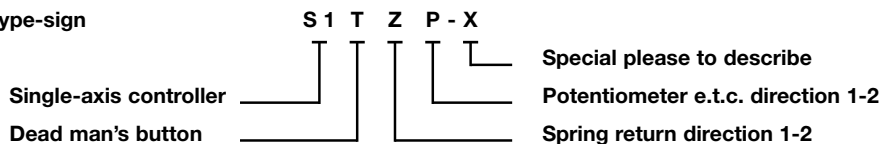
S 1 with knob solid GK 4



S 1 with knob GS 8



Example for type-sign





The single-axis controller S 14 is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for remote control and hoisting applications. The S 14 is resistant to oil, maritime climate, ozone and UV radiation.

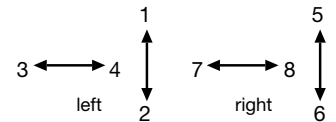
Contact complement 2 A 250 V AC 15 res. 1 A 24 V DC 13

Mechanical life 6 million (operating cycles)
Permissible ambient temperature Operation -40° C to +60° C
Storage -50° C to +80° C

Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection front IP 65 IEC 529 DIN 40050

Technical data look catalog 5/100
Description data look catalog 5/002

Spindle block with schematic representation of the master controller installation and deflection directions. Version shown for left-hand side installation (right-hand side installation is mirror image).

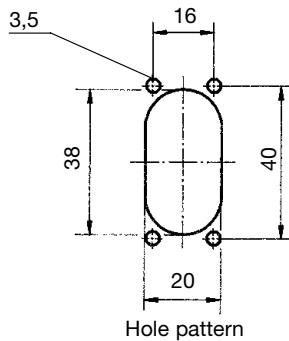
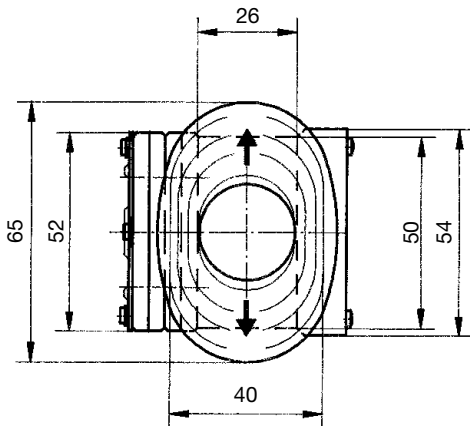
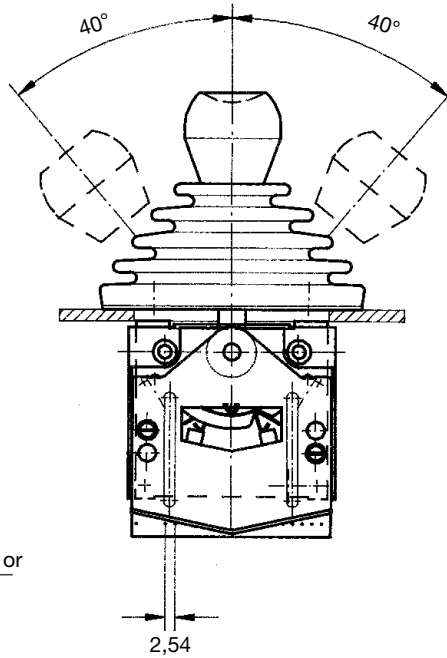
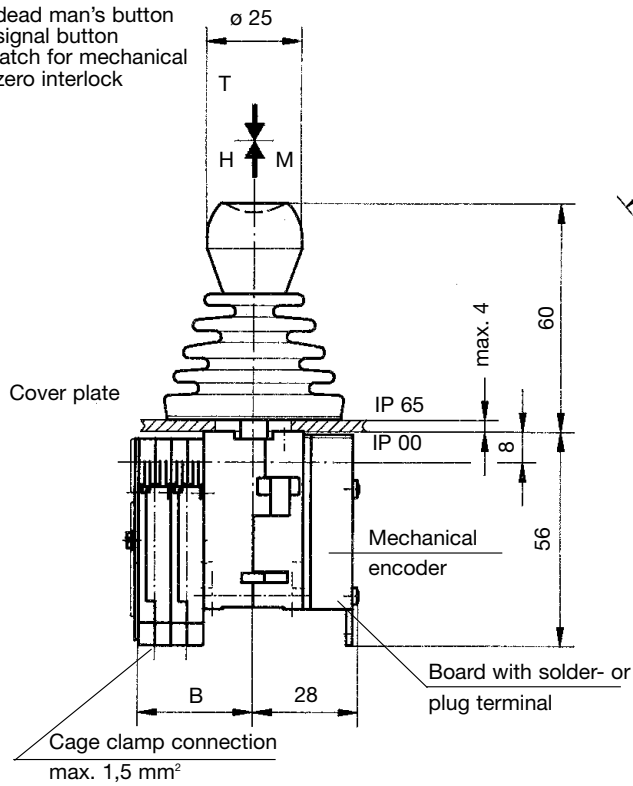


Deflection directions designated to DIN 15025

Pos.	S 14		Weight gramm	Part No. 5214...	Type	Price EURO
1			150		S 14	
2						
3						
4						
5						
10						
11						
12	Spring return in 0-position	(include in the spindle block)			Z	
13	Friction brake				R	
14						
20	Control-handle with knob solid					
21	Control-handle with latch for mechanical zero interlock		50		M	
22	Control-handle with dead man's button 1 NO		80		T	
23	Control-handle with signal button 1 NO		80		H	
24						
25						
26						
27						
28	Control-handle long 80 mm					
29						
30	Masterswitch switching sequence 4-0-4 adjustable (with encoder 6-0-6)	No. of contacts 2	70		01	
31		4	130		02	
32	Direction 1-2 or 3-4	6	190		03	
33	Switching program according contact-arrangement MS... look catalog 5/001					
34	or to your contact-arrangement					
35						
36						
44	Mechanical encoder with mounted direction 1-2 or 3-4 life 5 x 10 ⁶ switching cycles, 0,5 Watt wiper current max. 1 mA Mechanical encoder MEC 1-2 male connector EA/02-10 contact-arrangement MS 26-0 look catalog 5/001 Conductive-plastic potentiometer with centre tap linear resistance 2 x 10 kOhm	C 61	30		C	
45	Mechanical encoder MEC 1-7 male connector EA / 10-10 contact-arrangement MS 26-0-1 look catalog 5/001 Conductive-plastic potentiometer with centre tap linear resistance 2 x 5 kOhm	C 62	20		C	
46	Mechanical encoder MEC 1-6 male connector EA / 09-10, 6 Bit Gray-Code	C 63	30		C	
47	Mechanical encoder MEC 1-6-5 male connector ER / 36-10 Power supply 24 V DC, output power impressed 4-20 mA	C 64	30		C	
48	Mechanical encoder MEC 1-6-8 male connector ER / 36-10 Power supply 24 V DC, output power impressed 0-20 mA	C 65	30		C	
52	Housing look catalog 1/350					
60	Indicating labels not engraved with 2 arrows					
61	Engraved each 10 characters					
70	Command and indicating devices look catalog 1/360					



T = dead man's button
H = signal button
M = latch for mechanical zero interlock



Type	No. of contacts	Dimension B
01	2	24
02	4	33
03	6	42

Example for type-sign

Single-axis controller

Dead man's button

Masterswitch direction 1-2

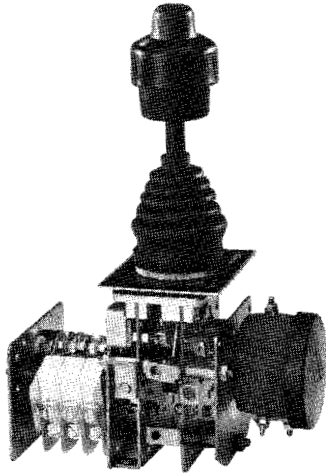
S 14 T - 01 Z C - X



Special please to describe

Mechanical encoder MEC direction 1-2

Spring return direction 1-2



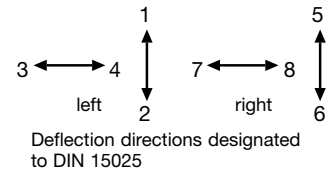
The single-axis controller S 2 is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for electro-hydraulic applications. The modular design enables the switching device to be used universally. The S 2 is resistant to oil, maritime climate, ozone and UV radiation.

Contact complement 2 A 250 V AC 15 res. 3 A 24 V DC 13

Mechanical life S 2 6 million (operating cycles)
 Mechanical life SS 2 10 million (operating cycles)
 Permissible ambient temperature Operation -40° C to +60° C
 Storage -50° C to +80° C

Climate resistance
 Damp heat constant DIN IEC 68 part 2-3
 Damp heat cyclic DIN IEC 68 part 2-30
 Degree of protection front IP 54 IEC 529 DIN 40050
 Technical data look catalog 5/100
 Description data look catalog 5/002

Spindle block with schematic representation of the master controller installation and deflection directions.
 Version shown for left-hand side installation (right-hand side installation is mirror image).



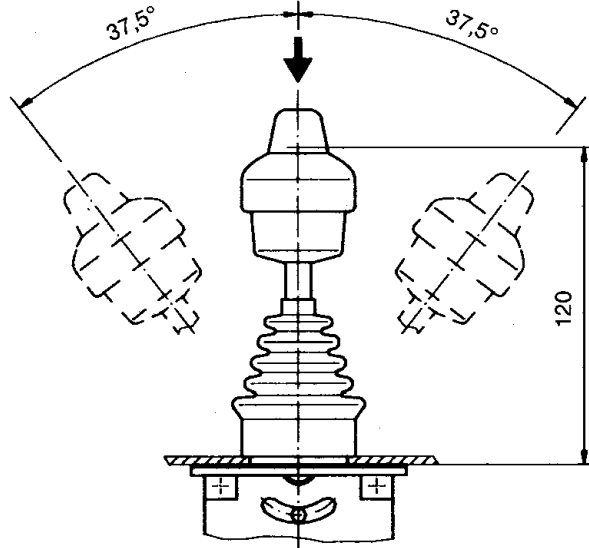
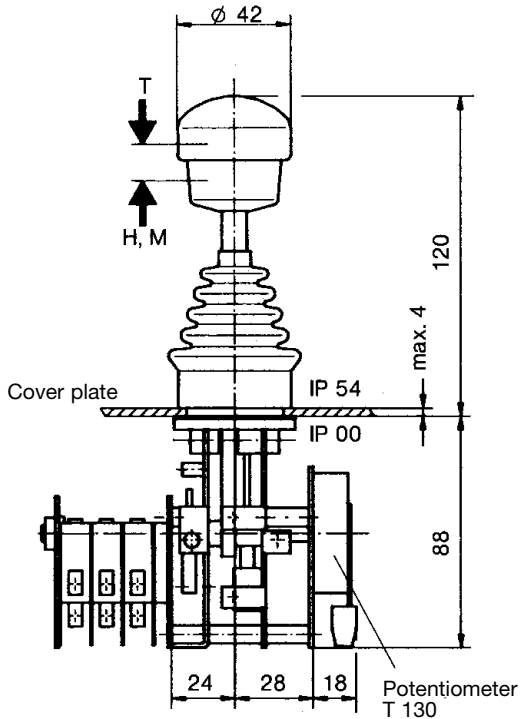
Pos.	S 2		Weight gramm	Part No. 5200...	Type	Price EURO
1			600		S 2	
2			650		SS 2	
3						
4						
5						
10	Gate special-shaped (for position view) M 1699 Spring return in 0-position Friction brake adjustable		60		P	
11			20		Z	
12			20		R	
13						
14						
20	Control-handle with knob solid Control-handle with latch for mechanical zero interlock Control-handle with dead man's button 1 NO Control-handle with signal button 1 NO Control-handle with push button 1 NO Control-handle with flat push button 1 NO Control-handle with palm grip B 5 Control-handle with palm grip B 5 with push button top 1 NO Control-handle long or short 140, 100 mm More knobs, grips and T-grips with and without signal devices look catalog 1/280...		50		M	
21			50		T	
22			50		H	
23			60		D	
24			60		DV	
25			40		B 5	
26			60		B 5T	
27						
28						
29						
30	Masterswitch switching sequence 5-0-5 Switching program according contact-arrangement MS... look catalog 5/001 or to your contact-arrangement Micro change over contact (MZT1) positive opening (additional price)	No. of contacts 3	300		02	
31		5	330		03	
32		7	360		04	
33		9	390		05	
34						
35						
36						
37						
40	Potentiometer e.t.c. each masterswitch with mounted Wire-wound potentiometer T 130, with centre tap linear Life 10 ⁷ switching cycles resistance 2 x 0,5/1/2/5/10 kOhm, 1,5 Watt wiper current max. 10 mA Prepared for mounting potentiometer shaft 6 mm adjusting-angle 2 x 150° Prepared for mounting potentiometer e.t.c. adjusting-angle variable. more Potentiometer e.t.c. look catalog 1/240...		70		P	
41					(P)	
42					(P)	
43						
50	Steel sheet housing B 200 masterswitch Gr. 05 More housing look catalog 1/350		1300		B	
51						
52						
60	Indicating labels not engraved with 2 arrows Engraved each 10 characters					
61						
62						
70	Command and indicating devices look catalog 1/360					



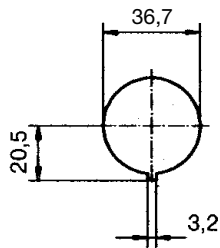
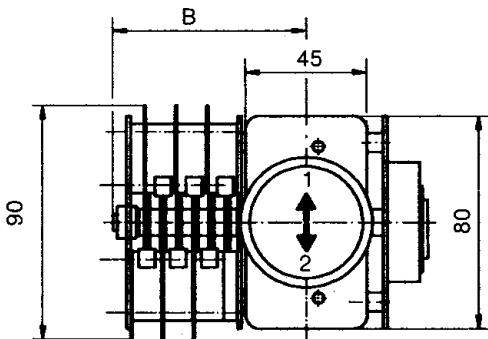
T = dead man's button
H = signal button
M = latch for mechanical zero interlock

Knob solid

D = -push button

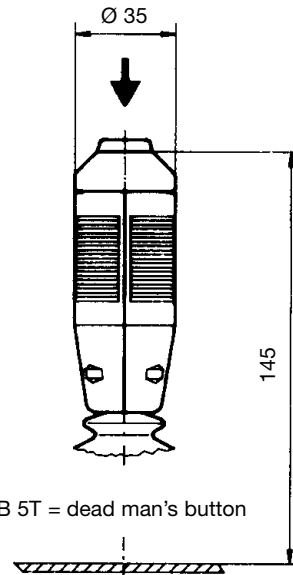


Type	No. of contacts	Dimension B
02	3	62
03	5	72
04	7	83
05	9	93



Hole pattern

Palm grip B 5



Example for type-sign

Single-axis controller

Dead man's button

Masterswitch direction 1-2

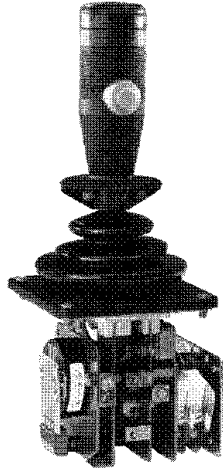
S 2 T -02 Z P - X



Special please to describe

Potentiometer e.t.c.

Spring return



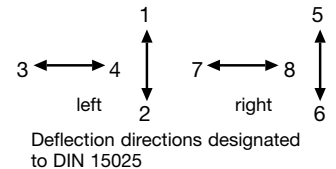
The single-axis controller S 21 is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for electro-hydraulic applications. The modular design enables the switching device to be used universally. The S 21 is resistant to oil, maritime climate, ozone and UV radiation.

Contact complement 2 A 250 V AC 15 res. 3 A 24 V DC 13

Mechanical life S 21 6 million (operating cycles)
 Mechanical life SS 21 10 million (operating cycles)
 Permissible ambient temperature Operation -40° C to +60° C
 Storage -50° C to +80° C

Climate resistance
 Damp heat constant DIN IEC 68 part 2-3
 Damp heat cyclic DIN IEC 68 part 2-30
 Degree of protection front IP 54 IEC 529 DIN 40050
 Technical data look catalog 5/100
 Description data look catalog 5/002

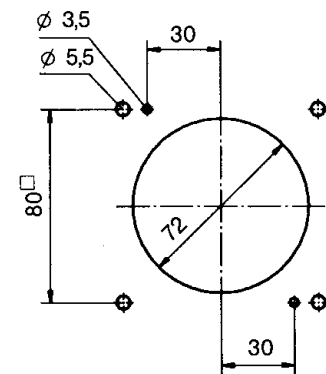
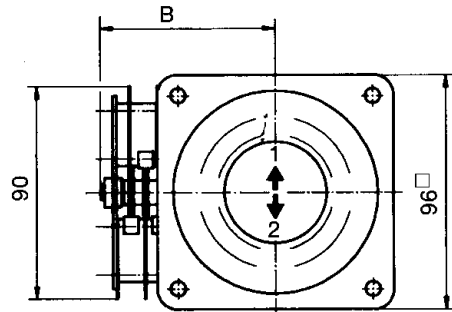
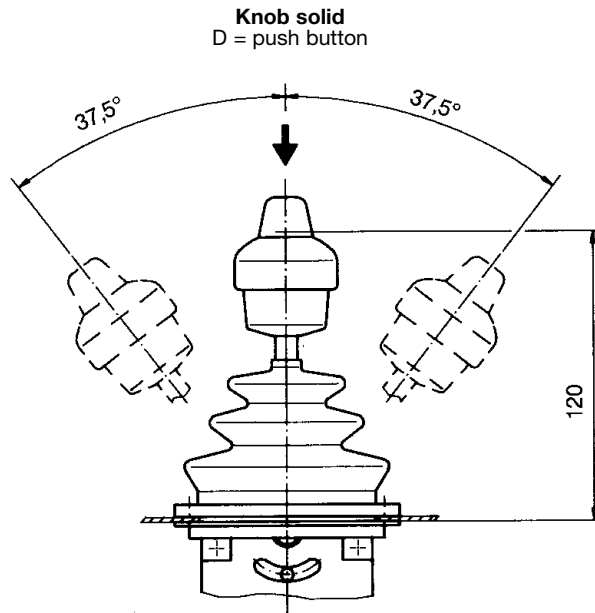
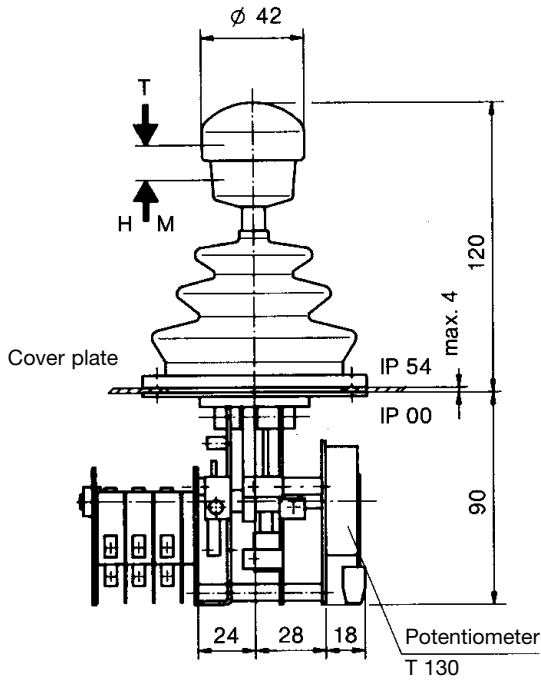
Spindle block with schematic representation of the master controller installation and deflection directions.
 Version shown for left-hand side installation (right-hand side installation is mirror image).



Pos.	S 21		Weight gramm	Part No. 5202...	Type	Price EURO
1			650		S 21	
2			650		SS 21	
3						
4						
5						
10	Spring return in 0-position Friction brake adjustable		20		Z	
11						
12			20		R	
13						
14						
20	Control-handle with knob solid					
21	Control-handle with latch for mechanical zero interlock		50		M	
22	Control-handle with dead man's button 1 NO		100		T	
23	Control-handle with signal button 1 NO		100		H	
24	Control-handle with push button 1 NO		110		D	
25	Control-handle with flat push button 1 NO		110		DV	
26	Control-handle with palm grip B 1		40		B 1	
27	Control-handle with palm grip B 1 with push button top 1 NO		60		B 1T	
28	Control-handle long or short 140, 100 mm					
29	More knobs, grips and T-grips with and without signal devices look catalog 1/280...					
30	Masterswitch switching sequence 5-0-5 Switching program according contact-arrangement MS... look catalog 5/001 or to your contact-arrangement	No. of contacts 3	300		02	
31		5	330		03	
32		7	360		04	
33		9	390		05	
34						
35						
36						
40	Potentiometer e.t.c. each masterswitch with mounted Wire-wound potentiometer T 130, with centre tap linear Life 10 ⁷ switching cycles resistance 2 x 0,5/1/2/5/10 kOhm, 1,5 Watt wiper current max. 10 mA		70		P	
41	Prepared for mounting potentiometer shaft 6 mm adjusting-angle 2 x 150°				(P)	
42	Prepared for mounting potentiometer e.t.c. adjusting-angle variable.				(P)	
43	more Potentiometer e.t.c. look catalog 1/240...					
50	Steel sheet housing B 200 masterswitch Gr. 05		1300		B	
51						
52	More housing look catalog 1/350					
60	Indicating labels not engraved with 2 arrows					
61	Engraved each 10 characters					
62						
70	Command and indicating devices look catalog 1/360					

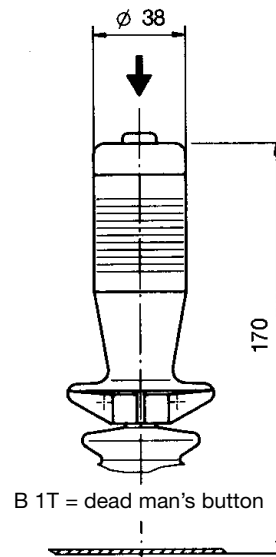


T = dead man's button
H = signal button
M = latch for mechanical zero interlock



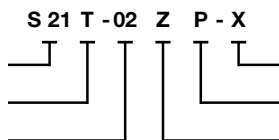
Hole pattern

Palm grip B 1



Type	No. of contacts	Dimension B
02	3	62
03	5	72
04	7	83
05	9	93

Example for type-sign
Single-axis controller
Dead man's button
Masterswitch direction 1-2



Special please to describe
Potentiometer e.t.c.
Spring return



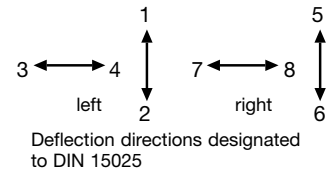
The single-axis controller S 22 is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for electro-hydraulic applications. The modular design enables the switching device to be used universally. The S 21 is resistant to oil, maritime climate, ozone and UV radiation.

Contact complement 2 A 250 V AC 15 res. 3 A 24 V DC 13

Mechanical life S 22 6 million (operating cycles)
 Mechanical life SS 22 10 million (operating cycles)
 Permissible ambient temperature Operation -40° C to +60° C
 Storage -50° C to +80° C

Climate resistance
 Damp heat constant DIN IEC 68 part 2-3
 Damp heat cyclic DIN IEC 68 part 2-30
 Degree of protection front IP 54 IEC 529 DIN 40050
 Technical data look catalog 5/100
 Description data look catalog 5/002

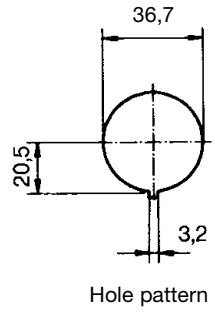
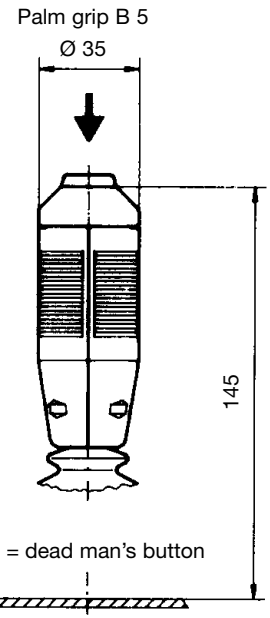
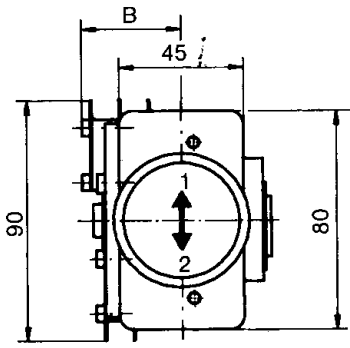
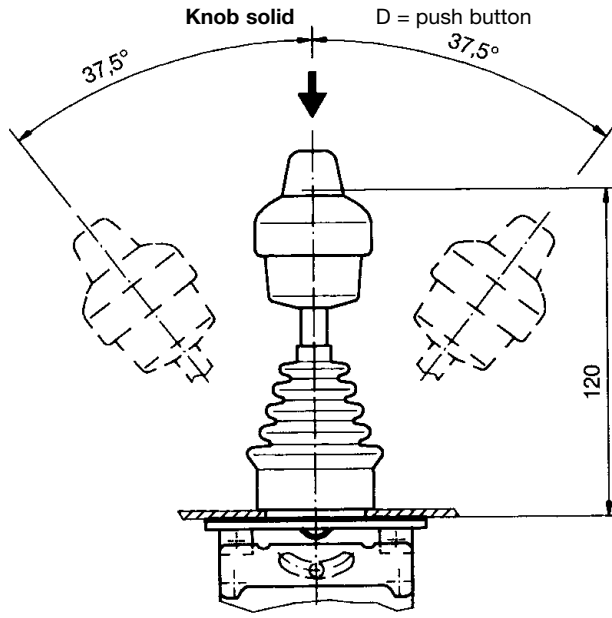
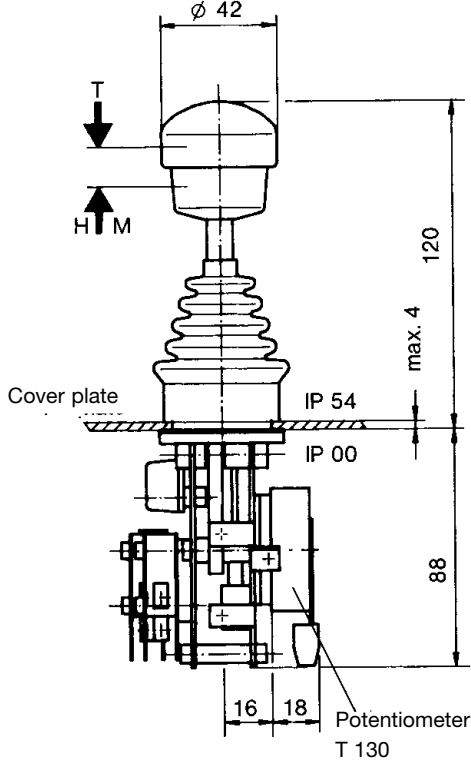
Spindle block with schematic representation of the master controller installation and deflection directions.
 Version shown for left-hand side installation (right-hand side installation is mirror image).



Pos.	S 22		Weight gramm	Part No. 5204...	Type	Price EURO
1			600		S 22	
2			650		SS 22	
3						
4						
5						
10	Spring return in 0-position Friction brake adjustable		20		Z	
11						
12						
13						
14						
20	Control-handle with knob solid					
21	Control-handle with latch for mechanical zero interlock		50		M	
22	Control-handle with dead man's button 1 NO		50		T	
23	Control-handle with signal button 1 NO		50		H	
24	Control-handle with push button 1 NO		60		D	
25	Control-handle with flat push button 1 NO		60		DV	
26	Control-handle with palm grip B 1		40		B 5	
27	Control-handle with palm grip B 1 with push button top 1 NO		60		B 5T	
28	Control-handle long or short 140, 100 mm					
29	More knobs, grips and T-grips with and without signal devices look catalog 1/280...					
30	Masterswitch switching sequence -0- Switching program according contact-arrangement MS... look catalog 5/001 or to your contact-arrangement Switching sequence 2-0-2	No. of contacts 1	150		1	
31		2	170		2	
32		3	190		3	
33		4	210		4	
34						
35						
36						
40	Potentiometer e.t.c. each masterswitch with mounted Wire-wound potentiometer T 130, with centre tap linear Life 10 ⁷ switching cycle resistance 2 x 0,5/1/2/5/10 kOhm, 1,5 Watt wiper current max. 10 mA		70		P	
41	Prepared for mounting potentiometer shaft 6 mm adjusting-angle 2 x 150°				(P)	
42	Prepared for mounting potentiometer e.t.c. adjusting-angle variable.				(P)	
43	more Potentiometer e.t.c. look catalog 1/240...					
50	Steel sheet housing B 200 masterswitch Gr. 4		1300		B	
51						
52	More housing look catalog 1/350					
60	Indicating labels not engraved with 2 arrows					
61	Engraved each 10 characters					
62						
70	Command and indicating devices look catalog 1/360					

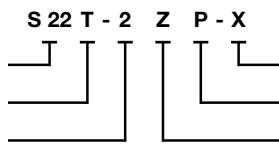


T = dead man's button
H = signal button
M = latch for mechanical zero interlock

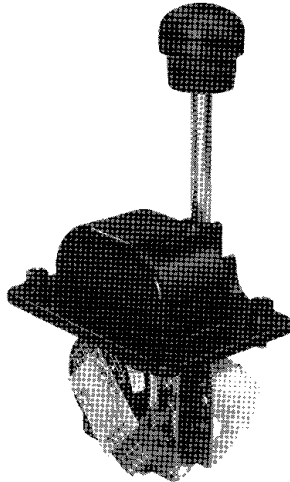


Type	No. of contacts	Dimension B
1	1	25
2	2	31
3	3	36
4	4	42

Example for type-sign
Single-axis controller
Dead man's button
Masterswitch direction 1-2



Special please to describe
Potentiometer e.t.c.
Spring return



The single-axis controller S 23 is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for electro-hydraulic applications and offshore. The modular design enables the switching device to be used universally. The S 23 is resistant to oil, maritime climate, ozone and UV radiation.

Contact complement 2 A 250 V AC 15 res. 3 A 24 V DC 13

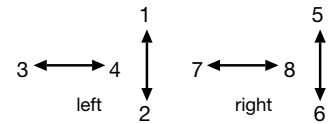
Mechanical life 6 million (operating cycles)
Permissible ambient temperature Operation -40° C to +60° C
Storage -50° C to +80° C

Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection front IP 65 IEC 529 DIN 40050

Technical data look catalog 5/100
Description data look catalog 5/002

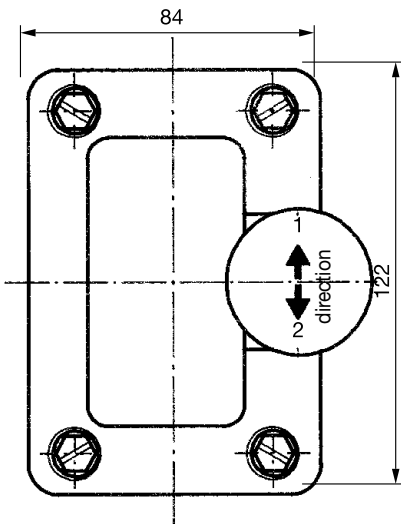
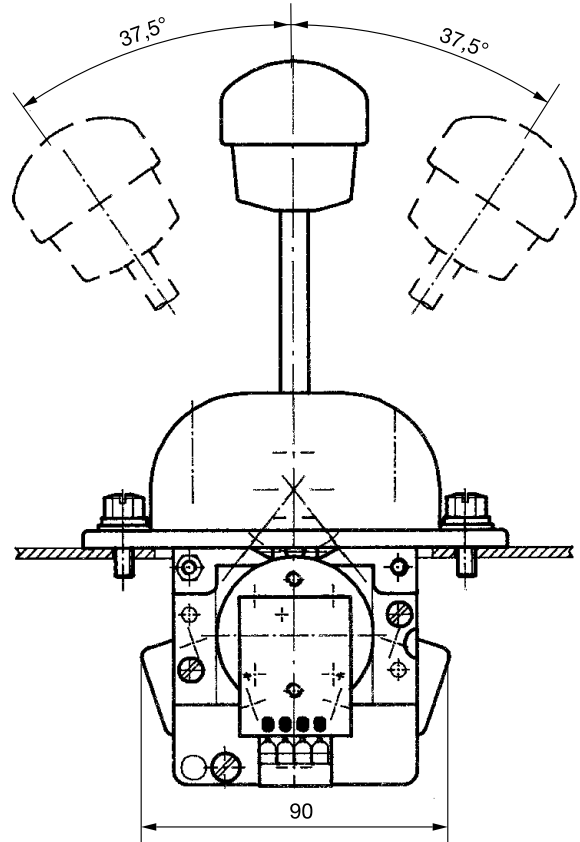
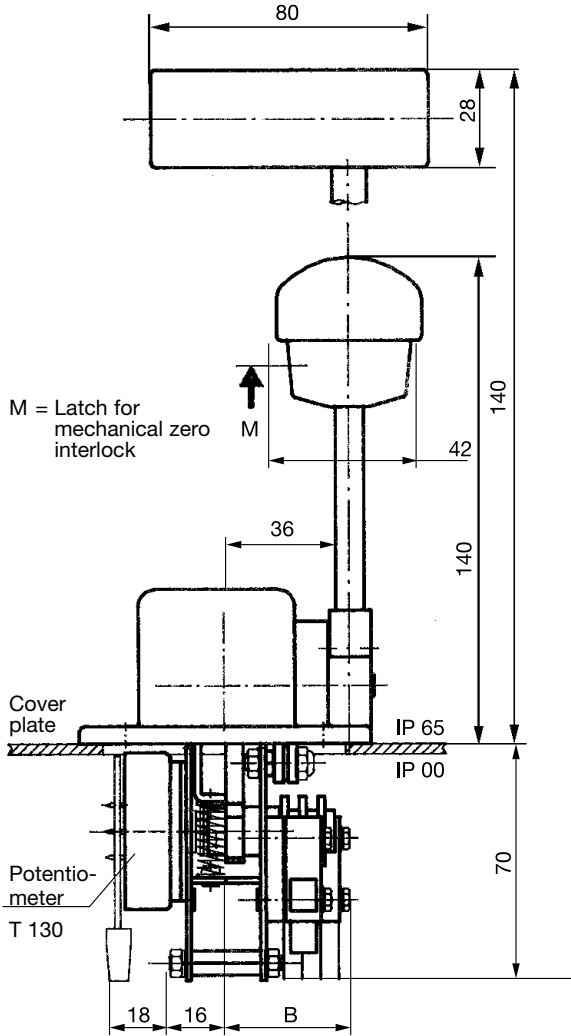
Spindle block with schematic representation of the master controller installation and deflection directions.

Version shown for left-hand side installation (right-hand side installation is mirror image).

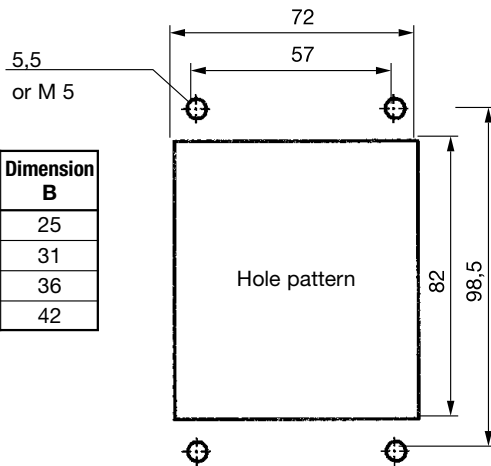


Deflection directions designated to DIN 15025

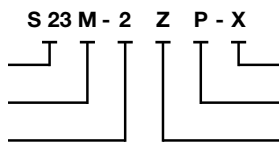
Pos.	S 23		Weight gramm	Part No. 5208...	Type	Price EURO
1			700		S 23	
2						
3						
4						
5						
10	Spring return in 0-position		20		Z	
11						
12		Friction brake adjustable	20		R	
13						
20	Control-handle with knob solid		50		M	
21		Control-handle with latch for mechanical zero interlock				
22						
23						
24	Control-handle with T-grip		40		Q	
25						
26						
27						
28		Control-handle long or short 160, 120 mm				
29						
30	Masterswitch switching sequence -0-	No. of contacts 1	150		1	
31		2	170		2	
32		3	190		3	
33		4	210		4	
34	Switching program according contact-arrangement MS... look catalog 5/001 or to your contact-arrangement					
35						
36	Switching sequence 2-0-2					
40	Potentiometer e.t.c. each masterswitch with mounted		70		P	
41	Wire-wound potentiometer T 130, with centre tap linear Life 10 ⁷ switching cycles resistance 2 x 0,5/1/2/5/10 kOhm, 1,5 Watt wiper current max. 10 mA				(P)	
42	Prepared for mounting potentiometer shaft 6 mm adjusting-angle 2 x 150°				(P)	
43	Prepared for mounting potentiometer e.t.c. adjusting-angle variable. more Potentiometer e.t.c. look catalog 1/240...					
50	Steel sheet housing B 200 masterswitch Gr. 4		1300		B	
51						
52	More housing look catalog 1/350					
60	Indicating labels not engraved with 2 arrows					
61	Engraved each 10 characters					
62						
70	Command and indicating devices look catalog 1/360					



Type	No. of contacts	Dimension B
1	1	25
2	2	31
3	3	36
4	4	42



Example for type-sign
Single-axis controller
Mechanical zero interlock
Masterswitch direction 1-2



Special please to describe
Potentiometer e.t.c.
Spring return



The single-axis controller S 3 is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for nautical navigation applications. The modular design enables the switching device to be used universally. The S 3 is resistant to oil, maritime climate, ozone and UV radiation.

Contact complement 0,5 A 110 V AC 15 res. 1,5 A 24 V DC 13
I min > 0,2 mA 2 V DC 12 Gold plated for max. load of 0,12 Watt (standard)
or I max < 300 mA 0,4 V DC 12 max. capacity 0,12 Watt do not exceed!
I min >0,2 mA 2 V DC 12 max. contact reliability for very low current (special)

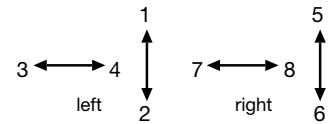
Mechanical life 12 million (operating cycles)
 Permissible ambient temperature Operation -40° C to +60° C
 Storage -50° C to +80° C

Climate resistance
 Damp heat constant DIN IEC 68 part 2-3
 Damp heat cyclic DIN IEC 68 part 2-30
 Degree of protection front IP 66 IEC 529 DIN 40050

Technical data look catalog 5/100
 Description data look catalog 5/002

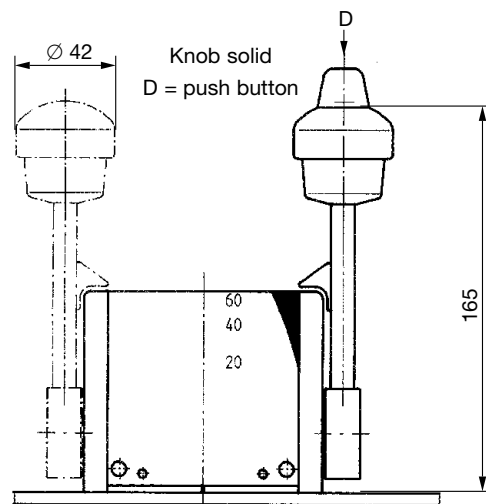
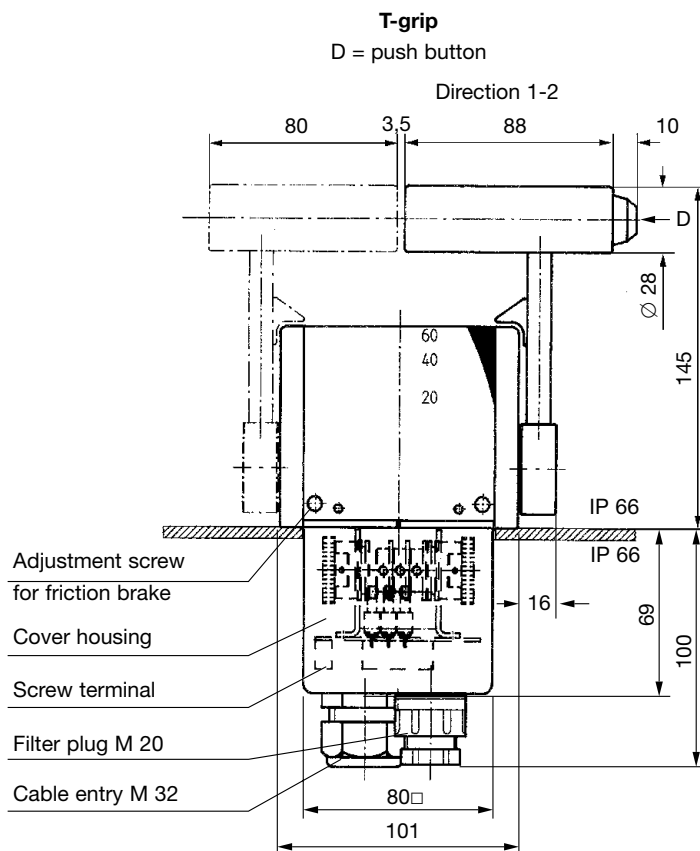
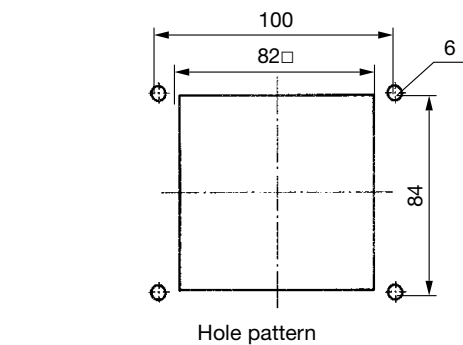
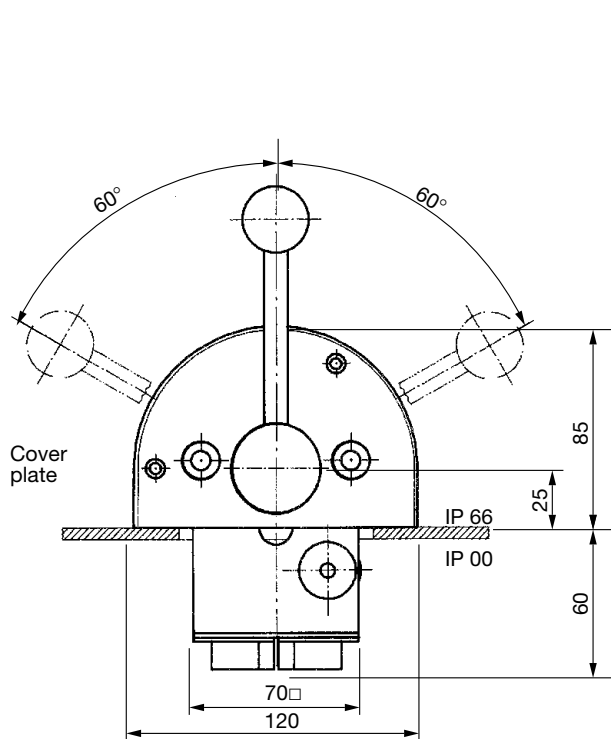
Spindle block with schematic representation of the master controller installation and deflection directions.

Version shown for left-hand side installation (right-hand side installation is mirror image).



Deflection directions designated to DIN 15025

Pos.	S 3		Weight gramm	Part No. 5212...	Type	Price EURO
1			2700		S 3	
2						
3						
4						
5						
10	Spring return in 0-position Friction brake adjustable		30		Z	
11						
12						
13						
14						
20	Control-handle with knob solid Control-handle with push button 1 NO Control-handle with T-grip Control-handle with T-grip and push button side 1 NO Control-handle long or short 180, 140 mm		110		D	
21						
22						
23						
24						
25						
26						
27						
28						
29						
30	Masterswitch switching sequence -0- Direction 1-2 or 3-4 Switching program according contact-arrangement MS... look catalog 5/001 or to your contact-arrangement Switching sequence special	No. of contacts 1	20		1	
31		2	40		2	
32		3	60		3	
33						
34						
35						
36						
40	Potentiometer e.t.c. each masterswitch with mounted Conductive-plastic potentiometer T 246, with centre tap linear Life 10 ⁷ switching cycles resistance 2 x 5 kOhm, 0,5 Watt wiper current max. 1 mA Prepared for mounting potentiometer shaft 6 mm adjusting-angle 2 x 75° Prepared for mounting potentiometer e.t.c. adjusting-angle variable. more Potentiometer e.t.c. look catalog 1/240...		70		P	
41					(P)	
42					(P)	
43						
50	Cover housing Filter plug M 20 for air-condition Cable entry M 32 with anti-kink protection		300		B	
51			20			
52			30			
53						
54						
55						
56						
60	Indicating label eloxal aluminium plate silvery (include in the spindle block) Engraved each 10 characters					
61						



Example for type-sign

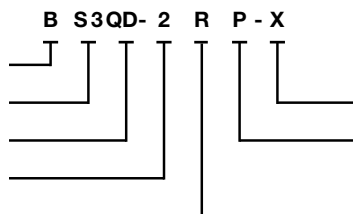
Cover housing

Single-axis controller

T-grip with push button

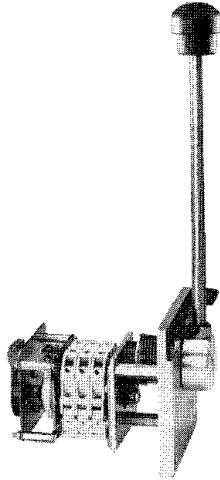
Masterswitch direction 1-2

Friction brake direction 1-2



Special please to describe

Potentiometer e.t.c. direction 1-2



The single-axis controller S 6 is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for hoisting applications. The modular design enables the switching device to be used universally. The S 6 is resistant to oil, maritime climate, ozone and UV radiation.

Contact complement 2 A 250 V AC 15 res. 1 A 24 V DC 13 (standard) or 4 A 250 V AC 15 (special)

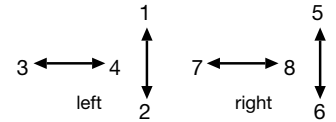
Mechanical life 10 million (operating cycles)
Permissible ambient temperature Operation -40° C to +60° C
Storage -50° C to +80° C

Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection front IP 54 IEC 529 DIN 40050

Technical data look catalog 5/100
Description data look catalog 5/002

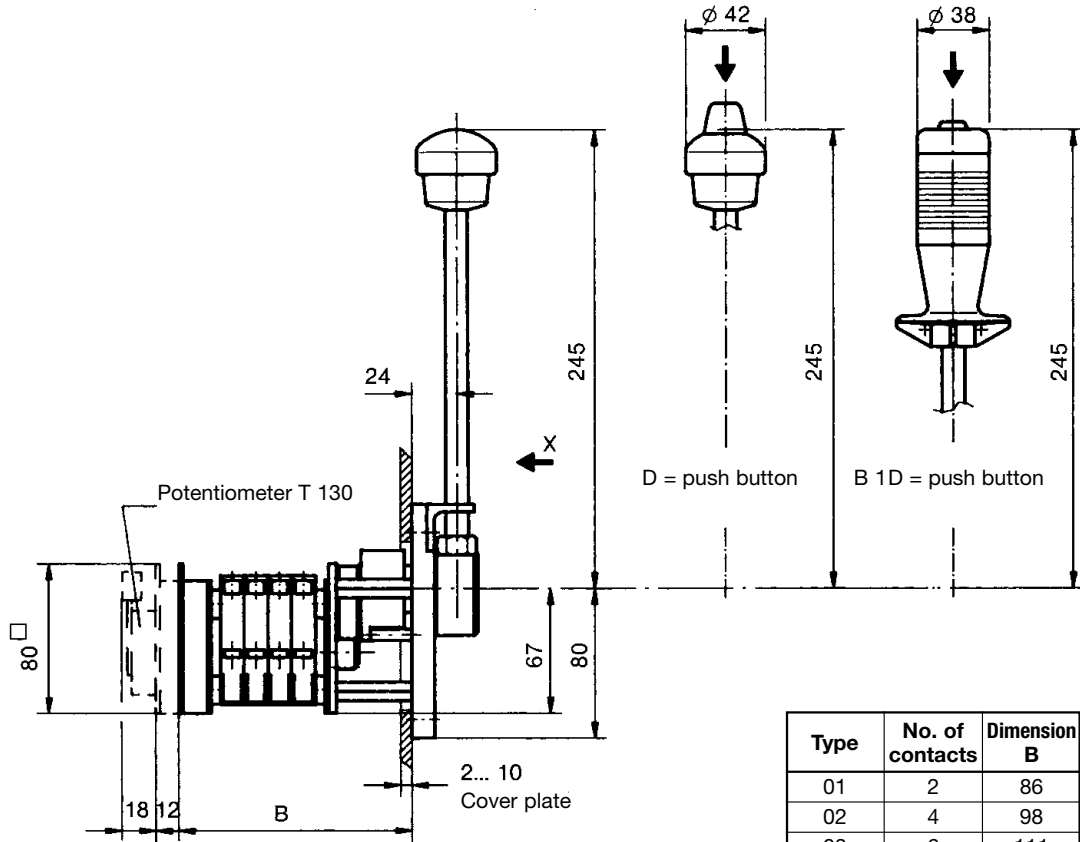
Spindle block with schematic representation of the master controller installation and deflection directions.

Version shown for left-hand side installation (right-hand side installation is mirror image).

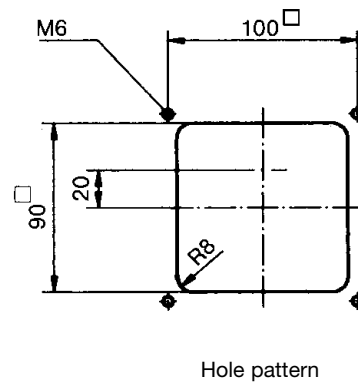
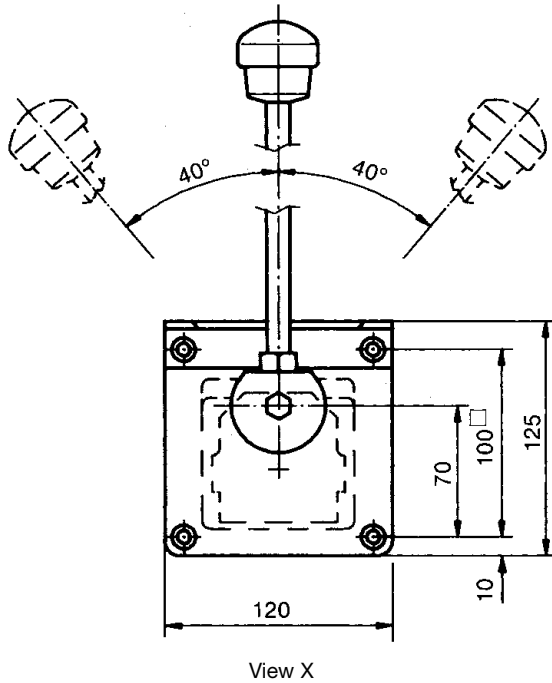


Deflection directions designated to DIN 15025

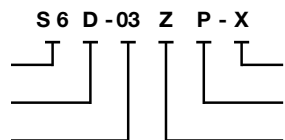
Pos.	S 6		Weight gramm	Part No. 5216...	Type	Price EURO
1			960		S 6	
2						
3						
4						
5						
10	Spring return in 0-position		110		Z	
11						
12		Friction brake adjustable	30		R	
13						
14						
20	Control-handle with push button 1 NO with flexible cable		110		D	
21						
22						
23						
24						
25						
26		Control-handle with palm grip B 1	40		B 1	
27		Control-handle with palm grip B 1 with push button top 1 NO	60		B 1D	
28		Control-handle long or short 265, 225 mm				
29						
30	Masterswitch switching sequence 4-0-4	No. of contacts 2	290		01	
31		4	350		02	
32		6	410		03	
33		8	470		04	
34		10	530		05	
35		12	590		06	
36		Switching sequence 5-0-5 or 6-0-6				
40	Potentiometer e.t.c. each masterswitch with mounted Wire-wound potentiometer T 130, with centre tap linear Life 10 ⁷ switching cycles resistance 2 x 0,5/1/2/5/10 kOhm, 1,5 Watt wiper current max. 10 mA		70		P	
41	Prepared for mounting potentiometer shaft 6 mm adjusting-angle 2 x 150°				(P)	
42	Prepared for mounting potentiometer e.t.c. adjusting-angle variable.				(P)	
43	more Potentiometer e.t.c. look catalog 1/240...					
50	More housing look catalog 1/350					
51						
52						
60	Indicating labels not engraved with 2 arrows					
61	Engraved each 10 characters					
62						
70	Command and indicating devices look catalog 1/360					



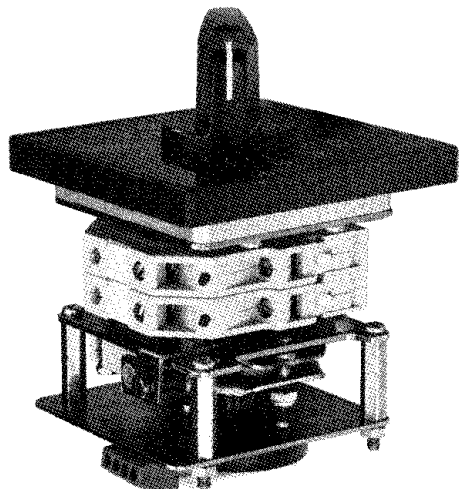
Type	No. of contacts	Dimension B
01	2	86
02	4	98
03	6	111
04	8	123
05	10	136
06	12	148



Example for type-sign
Single-axis controller
Push button
Masterswitch direction 1-2



Special please to describe
Potentiometer e.t.c.
Spring return



The control-switch N 6 is a rugged switching device according IEC 947-5-1 EN 60947 DIN VDE 0660-200 for hoisting and electro-hydraulic applications. The modular design enables the switching device to be used universally. The N 6 is resistant to oil, maritime climate, ozone and UV radiation.

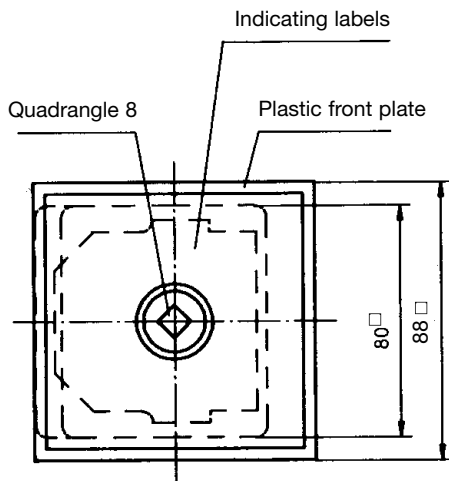
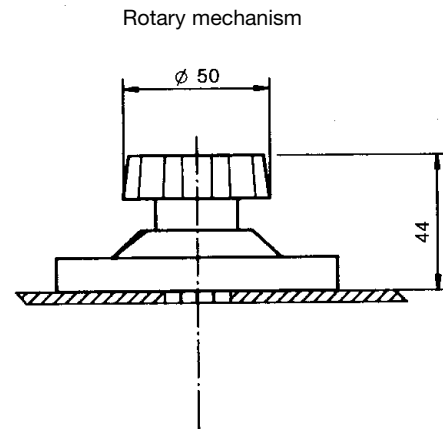
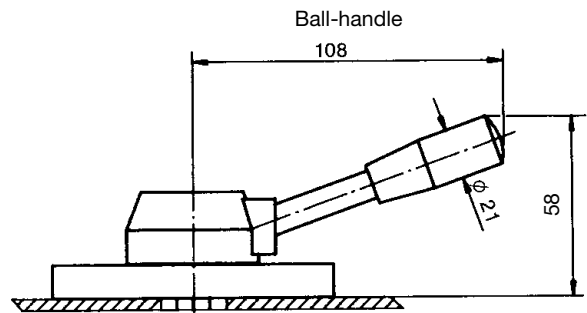
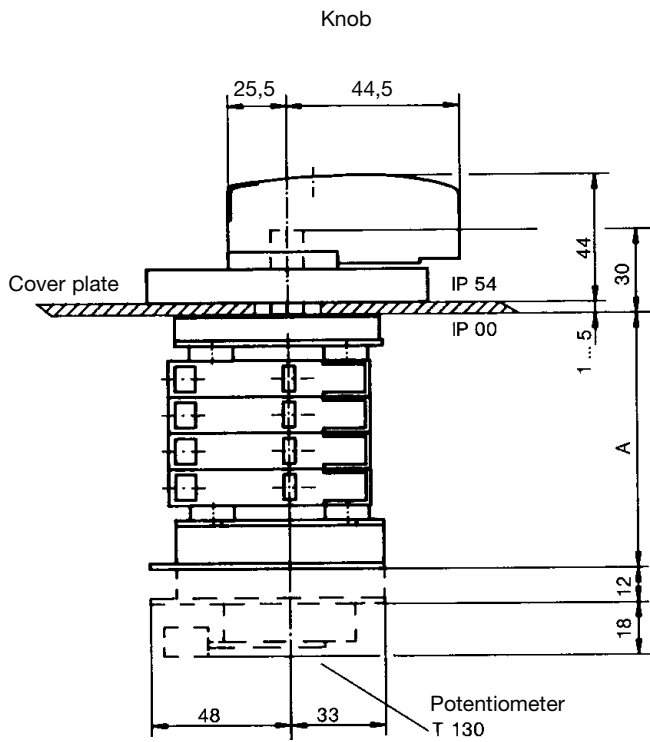
Contact complement 2 A 250 V AC 15 res. 1 A 24 V DC 13 (standard) or 4 A 250 V AC 15 (special)

Mechanical life 10 million (operating cycles)
Permissible ambient temperature Operation -40° C to +60° C
Storage -50° C to +80° C

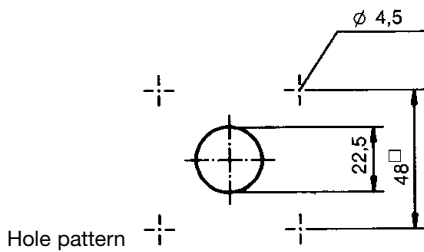
Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection front IP 54 IEC 529 DIN 40050

Technical data look catalog 5/100
Description data look catalog 5/002

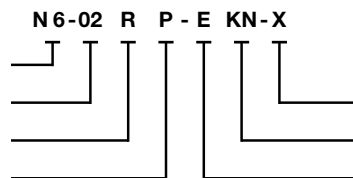
Pos.		No. of contacts	Weight gramm	Part No. 5220...	Type	Price EURO
1	Control-switch insert	2	290		01	
2	with free shaft end	4	350		02	
3	Switching sequence 4-0-4	6	410		03	
4	Switching program according contact-arrangement MS look catalog 5/001	8	470		04	
5	or to your contact-arrangement	10	530		05	
6		12	590		06	
7	Switching sequence 5-0-5 or 6-0-6 or 0-18					
8	Micro changeover contact (MZT1) positive opening (additional price)	2				
10	Spring return in 0-position max. 100 Grad (2 x 70°)		110		Z	
11	Friction brake adjustable max. 260 Grad (2 x 130°)		30		R	
12	Degree of protection, front IP 65 by seal ring					
15	Plastic-front plate 88 x 88 mm with indicating label		20		E	
16						
17						
20	Drive Knob		30		KN	
21	Ball-handle		50		HG	
22	Rotary mechanism		30		DG	
23						
24						
25	Potentiometer e.t.c. with mounted Wire-wound potentiometer T 130 with centre tap linear Life 10 ⁷ switching cycles resistance 2 x 0,5/1/2/5/10 kOhm 1,5 Watt wiper current max. 10 mA		70		P	
26	Prepared for mounting potentiometer shaft 6 mm adjusting-angle 2 x 150°				(P)	
27	Prepared for mounting potentiometer e.t.c. adjusting-angle variable.				(P)	
28	more Potentiometer e.t.c. look catalog 1/240...					
30	Housing look catalog 1/350					
40	Indicating labels not engraved					
41	Engraved each 10 characters					
50	Command and indicating devices look catalog 1/360					



Type	No. of contacts	Dimension A	Spring return
01	2	51	+25
02	4	63	
03	6	76	
04	8	88	
05	10	101	
06	12	113	



Example for type-sign
Control-switch
Control-switch insert
Friction brake
Potentiometer e.t.c.



Special please to describe
Knob
Plastic front plate



□ = resistance value linear and part number $\hat{=}$ $\left\{ \begin{array}{ll} 1 = 0.5 \text{ kOhm, with centre tap} & 2 \times 0.5 \text{ kOhm} \\ 2 = 1.0 \text{ kOhm, with centre tap} & 2 \times 1.0 \text{ kOhm} \\ 3 = 2.0 \text{ kOhm, with centre tap} & 2 \times 2.0 \text{ kOhm} \\ 4 = 5.0 \text{ kOhm, with centre tap} & 2 \times 5.0 \text{ kOhm} \\ 5 = 10.0 \text{ kOhm, with centre tap} & 2 \times 10.0 \text{ kOhm} \end{array} \right.$

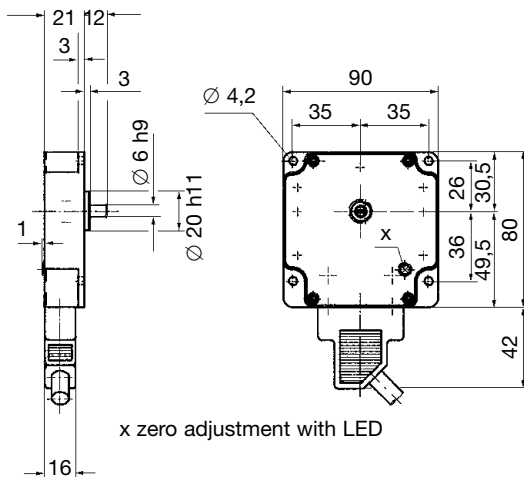
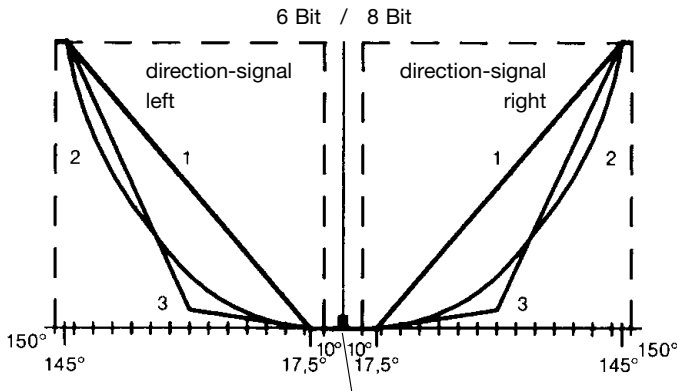
Pos.	for mounting on: V 6 / D 64 / V 5 / V 3 / S 2 / S 6 / N 6 / P 7 / P 8	Type	Weight gramm	Part No. 5240...	Type	Price EURO
1	Wire-wound potentiometer linear life 10 ⁷ switching cycles 1,5 Watt max. wiper current 10 mA	T 129	60	...00100 □	P01 □	
2	Wire-wound potentiometer linear with centre tap life 10 ⁷ switching cycles 1,5 Watt max. wiper current 10 mA	T 130	60	...00200 □	P02 □	
3	Wire-wound potentiometer linear life 10 ⁷ switching cycles 2,5 Watt max. wiper current 10 mA	T 131	70	...00300 □	P03 □	
4	like T 131 but with oil-filling protection for corrossion	T 131-Oel	80	...00400 □	P04 □	
5	Wire-wound potentiometer linear with centre tap life 10 ⁷ switching cycles 2,5 Watt max. wiper current 10 mA	T 132	70	...00500 □	P05 □	
6	like T 132 but with oil-filling protection for corrossion	T 132-Oel	80	...00600 □	P06 □	
7	Wire-wound potentiometer characteristic progressive with centre tap life 10 ⁷ switching cycles 1,5 Watt max. wiper current 10 mA	T 178	70	...00700 □	P07 □	
8	Wire-wound potentiometer linear with centre tap life 5 x 10 ⁶ switching cycles 1Watt max. wiper current 10 mA	T 238	20	...00800 □	P08 □	
9	Wire-wound potentiometer linear life 5 x 10 ⁶ switching cycles 1 Watt max. wiper current 10 mA	T 237	20	...00900 □	P09 □	
10	Wire-wound potentiometer linear with centre tap life 10 ⁶ switching cycles 60 Watt	T 133	150	...01000 □	P10 □	
11	Wire-wound potentiometer linear life 10 ⁶ switching cycles 60 Watt	T 134	150	...01100 □	P11 □	
12	Conductive-plastic potentiometer linear life 10 ⁷ switching cycles 0,5 Watt max. wiper current 1 mA	T 374	20	...01200 □	P12 □	
13	Conductive-plastic potentiometer linear with centre tap life 10 ⁷ switching cycles 0,5 Watt max. wiper current 1 mA	T 396	20	...01300 □	P13 □	
14						
15						
16						
	for mounting on: V 8 / D 8 / P 10 / P 12					
17	Wire-wound potentiometer linear with centre tap life 5 x 10 ⁶ switching cycles 1 Watt max. wiper current 10 mA	T 239	20	...01700 □	P17 □	
18	Conductive-plastic potentiometer linear with centre tap life 10 ⁷ switching cycles 0,5 Watt max. wiper current 1 mA	T 301	20	...01800 □	P18 □	
19	Conductive-plastic potentiometer linear with centre tap life 10 ⁷ switching cycles; 3 conductive-plastic contact way arrangement MSP 21-0 (catalog 5/001) 0,5 Watt max.wiper current 1 mA	T 426	25	...01900 □	P19 □	
20	Conductive-plastic potentiometer double linear with centre tap life 10 ⁷ switching cycles; 0,5 Watt max. wiper current 1 mA	T 432	25	...02000 □	P20 □	
21						
22						
23						
	for mounting on: V 10					
24	Wire-wound potentiometer linear with centre tap life 5 x 10 ⁶ switching cycles 1 Watt max. wiper current 10 mA	T 321	20	...02400 □	P24 □	
25	Conductive-plastic potentiometer linear with centre tap life 10 ⁷ switching cycles 0,5 Watt max. wiper current 1 mA	T 320	20	...02500 □	P25 □	
26	Conductive-plastic potentiometer linear life 10 ⁷ switching cycles 0,5 Watt max. wiper current 1 mA	T 337	20	...02600 □	P26 □	
27	Conductive-plastic potentiometer linear with centre tap life 10 ⁷ switching cycles; 2 conductive-plastic contact way arrangement MSP 21 (catalog 5/001) 0,5 Watt max. wiper current 1 mA	T 430	25	...02700 □	P27 □	
28						
29						
30						
	for mounting on: V 11					
31	Wire-wound potentiometer linear with centre tap life 5 x 10 ⁶ switching cycles 1 Watt max. wiper current 10 mA	T 316	20	...03100 □	P31 □	
32	Conductive-plastic potentiometer linear with centre tap life 10 ⁷ switching cycles 0,5 Watt max. wiper current 1 mA	T 365	20	...03200 □	P32 □	
36	Special potentiometer				P99 □	
41	Prepared for mounting potentiometer adjusting-angle switching device $\hat{=}$ potentiometer			...04100 □		
42	Prepared for mounting potentiometer adjusting-angle variable			...04200 □		



Pos.	for mounting on: V 6 / D 64 / V 11 / S 2 / S 6 / N 6	Type	Weight gramm	Part No. 52410...	Type	Price EURO
10	Opto-electronic encoder	8 Bit Gray-Code T 359	OEC 2-1-1	410	C01	
11		8 Bit Binary-Code T 359	OEC 2-2-1	410	C02	
12		6 Bit Gray-Code T 359	OEC 2-3-□	410	C03	
13		6 Bit Binary-Code T 359	OEC 2-4-□	410	C04	
14		9 Bit Gray-Code T 384	OEC 2-5-□	410	C05	
15		9 Bit Binary-Code T 384	OEC 2-6-□	410	C06	
16						
17						
18						
19						

- = Output characteristic
- 1 = Linear
- 2 = Quadratic
- 3 = Progressive
- 4 = Linear one sided right turn
- 5 = Linear one sided left turn

Technical data
 Power supply 18-30 V DC
 Output PNP 24 V DC 10 mA
 Scanning Gray-Code
 Rotation angle max. ± 150° (360°)



40	Cable Liy(c) 14 x 0,25 mm ² 2000 mm long wired on connector DA 15 with end splice					
41	Prepared for mounting encoder adjusting-angle switching-gear \triangle encoder				(C)	
42	Prepared for mounting encoder adjusting-angle variable.				(C)	
43	Additional price per metre cable Liy(c) 14 x 0,25 mm ²					



Pos.	for mounting on: V 6 / D 64 / V 11 / S 2 / S 6 / N 6	Type	Weight gramm	Part No. 52410...	Type	Price EURO
1	Opto-electronic encoder T 366 Output voltage impressed 0 – 10 Volt	OEC 2-3-□-1	410		C11	
2						
3						
4						
	<p>□ = Output characteristic 1 = Linear 2 = Quadratic 3 = Progressive</p> <p>Technical data Power supply 18-30 V DC Output 0–10 V (+5 mA) Scanning 6 bit Gray-Code Rotation angle max. ± 150°</p>					
5	Opto-electronic encoder T 367 Output voltage impressed ± 10 Volt	OEC 2-3-□-2	410		C15	
6						
7						
8						
	<p>□ = Output characteristic 1 = Linear 2 = Quadratic 3 = Progressive</p> <p>Technical data Power supply 18-30 V DC Output ±10 V (±5 mA) Scanning 6 bit Gray-Code Rotation angle max. ± 150°</p>					
40	Cable Liy(c) 14 x 0,25 mm ² 2000 mm long wired on connector DA 15 with end splice					
41	Prepared for mounting encoder adjusting-angle switching-gear $\hat{=}$ encoder				(C)	
42	Prepared for mounting encoder adjusting-angle variable				(C)	
43	Additional price per metre cable Liy(c) 14 x 0,25 mm ²					



Pos.	for mounting on: V 6 / D 64 / V 11 / S 2 / S 6 / N 6	Type	Weight gramm	Part No. 52410...	Type	Price EURO
1	Opto-electronic encoder Output power impressed 4 – 20 mA T 368	OEC 2-3-□-5	410		C19	
2	Opto-electronic encoder Output power impressed 0 – 20 mA T 368	OEC 2-3-□-8	410		C20	
3						
4						
	<p>□ = Output characteristic 1 = Linear 2 = Quadratic 3 = Progressive</p> <p>Technical data Power supply 18-30 V DC Output 4/0-20 mA Scanning 6 bit Gray-Code Rotation angle max. ± 150°</p>					
5	Opto-electronic encoder T 369 Output power impressed ± 20 mA	OEC 2-3-□-6	410		C23	
6						
7						
8						
	<p>□ = Output characteristic 1 = Linear 2 = Quadratic 3 = Progressive</p> <p>Technical data Power supply 18-30 V DC Output ±20 mA Scanning 6 bit Gray-Code Rotation angle max. ± 150°</p>					
40	Cable Liy(c) 14 x 0,25 mm ² 2000 mm long wired on connector DA 15 with end splice					
41	Prepared for mounting encoder adjusting-angle switching-gear Δ encoder				(C)	
42	Prepared for mounting encoder adjusting-angle variable.				(C)	
43	Additional price per metre cable Liy(c) 14 x 0,25 mm ²					



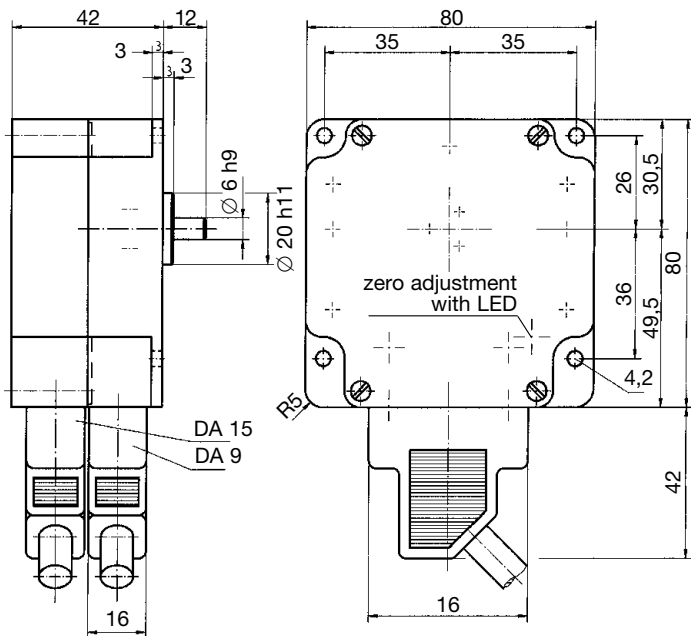
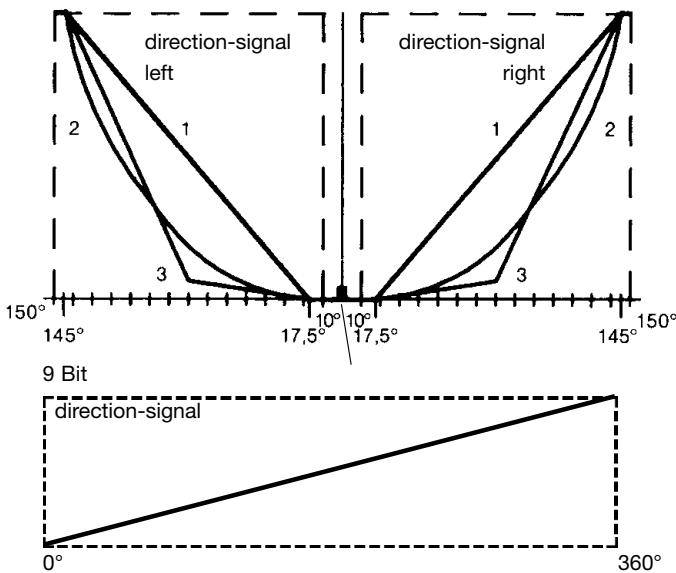
Pos.	for mounting on: V 6 / D 64 / V 11 / S 2 / S 6 / N 6	Type	Weight gramm	Part No. 52410...	Type	Price EURO
1	Opto-electronic encoder	8 Bit Gray-Code T 496	OEC 4-1-1-2	820	C27	
2		8 Bit Binary-Code T 496	OEC 4-2-1-2	820	C28	
3		6 Bit Gray-Code T 496	OEC 4-3-□-2	820	C29	
4		6 Bit Binary-Code T 496	OEC 4-4-□-2	820	C30	
5		9 Bit Gray-Code T 497	OEC 4-5-□-2	820	C31	
6		9 Bit Binary-Code T 497	OEC 4-6-□-2	820	C32	
7						
8						

□ = Output characteristic

- 1 = Linear
- 2 = Quadratic
- 3 = Progressive
- 4 = Linear one sided right turn
- 5 = Linear one sided left turn

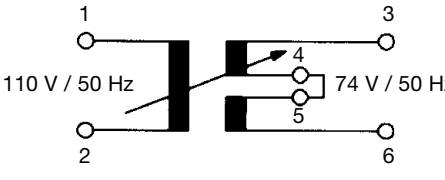
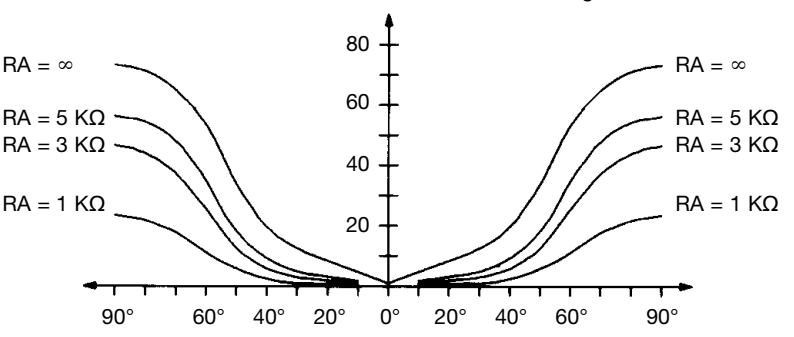
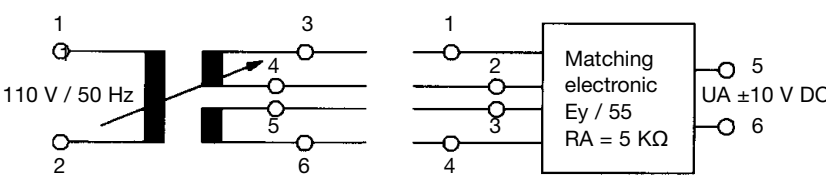
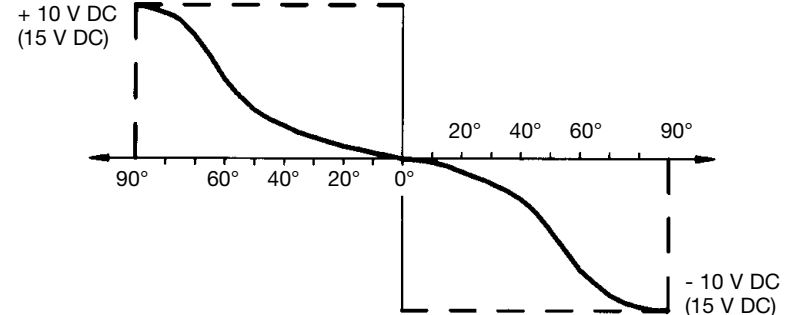
Technical data

Power supply 18-30 V DC, Output 6, 8 or 9 Bit, Scanning Gray-Code
Communication Profibus DP (DIN 19245 Part 3)
Ident.-No. 045 CH address 123 D (7 BH), other address by enquiry
Rotation angle max. ± 150° (360°), with connection for OEC 2
look catalog 1/241









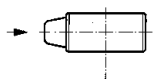
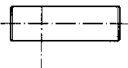
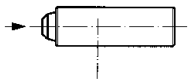


39	Connector DE 9 without wiring for Profibus-connection					
40	Cable Liy(c) 14 x 0,25 mm ² 450 mm long wired on 2 connectors DA 15 for OEC 4 / OEC 2					
41	Prepared for mounting encoder adjusting-angle switching-gear \triangle encoder				(C)	
42	Prepared for mounting encoder adjusting-angle variable				(C)	
43	Additional price per metre cable Liy(c) 14 x 0,25 mm ²					



Pos.	for mounting on: V 6 / V 11 / D 64 / S 2 / S 6 / N 6	Type	Weight gramm	Part No.	Type	Price EURO
2	<p>Inductive transducer IG 1</p>  <p>Technical data Mechanical life 2×10^7 switching cycles Input voltage AC 110 V, 50 Hz Output voltage AC 74 V, 50 Hz Transfer power max. 3 VA Rotation angle, max. $\pm 90^\circ$</p> 	T 440	850		I	
3	<p>Inductive transducer IG 1 with matching electronic Ey / 55 ± 10 V DC</p>  <p>Matching electronic Ey / 55 $RA = 5 \text{ K}\Omega$ $UA \pm 10 \text{ V DC}$</p> 	T 434			I	
20	Transformer with capacitor 4 mF for connection 220 V 50 Hz	MTD				
41	Prepared for mounting transducer adjusting-angle switching-gear $\hat{=}$ transducer				(I)	
42	Prepared for mounting transducer adjusting-angle variable.				(I)	



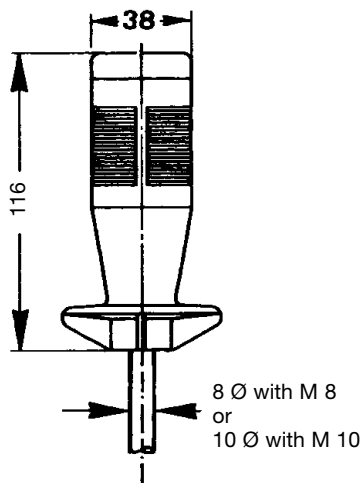
Pos.			Contact-complement	Weight gramm	Part No.	Type	Price EURO
1		Knob solid 42 mm Ø	KBAD 66	35		GK1	
2		Knob 42 mm Ø with push button top	KHS/177	25	1 change over contact 0,5 A 250 V AC 15 1,5 A 24 V DC 13	GK2	
3		Knob 42 mm Ø with push button operated by twisting the upper knob half	KBAD/230	170	1 change over contact 0,5 A 250 V AC 15 1,5 A 24 V DC 13	GK3	
4		Knob 25 mm Ø with M 6	KBAD 271	10		GK4	
5		Knob 27 mm Ø with M 8	KBAD 302	15		GK5	
6		Knob solid 29 mm Ø	KBAD/141	70		GS6	
7		Knob 29 mm Ø with push button top	KBAD/210	60	1 change over contact 0,5 A 250 V AC 15 1,5 A 24 V DC 13	GS7	
8		T-grip solid 28 mm Ø x 58 mm	KBAD 148	50		Q8	
9		T-grip 28 mm Ø x 58 mm with push button side	KBAD 147	60	1 change over contact 0,5 A 250 V AC 15 1,5 A 24 V DC 13	Q9	
10		T-grip solid 28 mm Ø x 80 mm	KBAD 355	50		Q10	
11		T-grip 28 mm Ø x 98 mm with push button side	KBAD 329	60	1 change over contact 0,5 A 250 V AC 15 1,5 A 24 V DC 13	Q11	
12							
21		Cable 4 x 0,25 mm ² x 450 mm long, wired included Pos. 1 – 12 Additional price per metre cable 4-pole					



Type → operator handles

switch devices ↓

	GK 1	GK2	GK3	GK4	GK5	GS6	GS7	Q8	Q9	Q10	Q11	B1	B2	B3	B4	B5	B6	B7/8	B9	B10
V 6	X		X					X	X			X		X		X		X	X	
VV 6	X		X					X	X			X		X		X		X	X	
V 11	X		X					X	X			X			X	X	X			
V 5	X							X				X				X				
VV 5	X		X					X	X			X		X		X	X	X	X	
V 8	X	X	X					X	X			X	X	X		X		X	X	
VV 8	X	X	X					X	X			X	X	X		X		X	X	
V 10	X				X	X	X								X	X	X			
V 14				X		X									X					
V 3	X							X				X				X				
D/ DD 64	X							X	X											X
D 8	X							X	X											X
D 3	X									X	X									
S 2	X		X			X	X	X	X			X				X	X			
S 21	X		X			X	X	X	X			X				X	X			
S 22	X		X			X	X	X	X			X				X	X			
SS 22	X		X			X	X	X	X			X				X	X			
S 23	X									X										
S 3	X									X	X									
S 14				X		X														
S 6	X	X	X					X	X			X				X				



The palm grip B 1 is an actuating element for our multi-axis and single-axis controller. It can also be used as an actuating element with hydraulic drives. Push buttons, rocker switches, e.t.c., can also be fitted to suit appropriate requirements. These devices have micro changeover contacts.

The palm grip has a highly flexible cable 4 (8) x 0,25 mm² x 450 mm long.

The mounting piece for the drive rod can be supplied with a tapped hole M 8 or M 10 (standard = M 10).

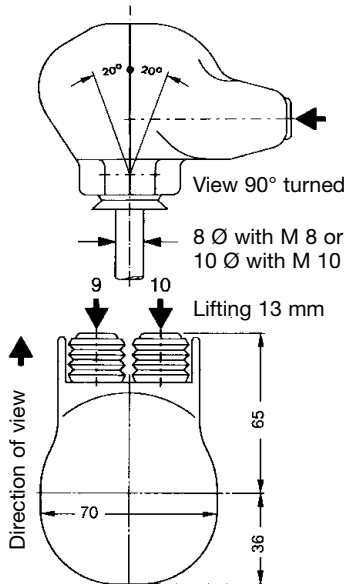
The palm grip B 1 is made of PPO plastic and is black in colour.

Contact complement 2 A 250 V AC 15 / 3 A 24 V DC 13
or 0,5 A 250 V AC 15 / 1,5 A 24 V DC 13

Permissible ambient temperature Operating -40°C to +60°C
Storage -50°C to +80°C

Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection front IP 54 IEC 529 DIN 40050

Pos.			Contact-complement	Weight gramm	Part No. 5284...	Type	Price EURO
1		Without built in	KBAD / 22	100		B 1	
2 3 4		Rocker switch top tast-0-tast T-0-T Rocker switch top tast-0-rest T-0-R Rocker switch top rest-0-rest R-0-R	KBAD / 46	2 change over contacts 2 A 250 V AC 15	120	B 1 W	
5		Rocker switch top tast-0-tast T-0-T with push button side	KBAD / 49	2 change over contacts 2 A 250 V AC 15 1 change over contact 0,5 A 250 V AC 15	130	B 1 WD	
6		Rocker switch top tast-0-tast T-0-T with 2 push button side	KBAD / 67	2 change over contacts 2 A 250 V AC 15 2 change over contacts 0,5 A 250 V AC 15	140	B 1 WDD	
7 8		Push button top with mechanical operation Push button top	KBAD / 27 KBAD / 25	1 change over contact 0,5 A 250 V AC 15	120 100	B 1 T B 1 D	
9 10		Push button top with 1 push button side Push button top with 2 push button side	KBAD / 47	2 change over contacts 0,5 A 250 V AC 15 3 change over contacts 0,5 A 250 V AC 15	120 130	B 1 DD B 1 DDD	
11 12 13		1 push button side 2 push button side 3 push button side	KBAD / 50	change over contacts 0,5 A 250 V AC 15	110 120 130	B 1 D B 1 DD B 1 DDD	
14		Push button top with Rocker switch side tast-0-tast (protection IP 41) T-0-T	KBAD / 75	1 change over contact 0,5 A 250 V AC 15 2 change over contacts 0,5A 250V AC 15	120	B 1 DW	
15 16 17		Lever switch side 0-tast mechanical operation Lever switch side 0-tast 1 contact Lever switch side 0-tast 2 contacts	KBAD / 126 KBAD / 54	change over contacts 2 A 250 V AC 15	150 120 130	B 1 KT B 1 K B 1 KK	
21 22		Cable 4 res. 8 x 0,25 mm ² x 450 mm long wired included Pos. 1-17 Additional price per metre cable 4-pole Additional price per metre cable 8-pole					



The palm grip B 2 is an actuating element for our multi-axis controller V 8. It can also be used as an actuating element for hydraulic drives. With each of the two push button one direction-contact (micro change over contact) also one potentiometer pushed. These palm grip realised the 3. direction 9-10 (3. axis) on our multi-axis controller V 8.

The palm grip has a highly flexible cable
8 x 0,25 mm² x 450 mm long.

The mounting piece for the drive rod can be adjusted steplessly up to 20° in all directions.

The palm grip B 2 is made of PPO plastic and is black in colour.

Contact complement 0,5 A 110 V AC 15 res. 1,5 A 24 V DC 13
I min > 0,2 mA 2 V DC 12 Gold plated for max. load of 0,12 Watt (standard)
or I max < 300 mA 0,4 V DC 12 max. capacity 0,12 Watt do not exceed!
I min > 0,2 mA 2 V DC 12 max. contact reliability for very low current (special)

Permissible ambient temperature	Operating -40°C to +60°C
	Storage -50°C to +80°C
Climate resistance	
Damp heat constant	DIN IEC 68 part 2-3
Damp heat cyclic	DIN IEC 68 part 2-30
Degree of protection front	IP 54 IEC 529 DIN 40050

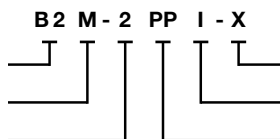
Pos.		Weight gramm	Part No. 5285...	Type	Price EURO
1	Palm grip with mounting piece for control-handle	200		B 2	
2	Latch for mechanical interlock for the push buttons	30		M	
3	2 direction-contacts	30		2	
4	2 wire-wound potentiometer T 239 linear life 5 x 10 ⁶ switching cycles resistance 1,2,5 kOhm 1 Watt wiper current max. 10 mA	60		PP	
5	2 conductive-plastic potentiometer T 301 linear life 10 ⁷ switching cycles resistance 1,2,5 kOhm 0,5 Watt wiper current max. 1 mA	50		PP	
6	more potentiometer e.t.c. look catalog 1/240				
10	Impedance converter Input ±15 Volt, Output ±10 V /5 mA	50		I	
22	Cable 8 x 0,25 mm ² x 450 mm long wired included Pos. 1-10 Additional price per metre cable 8-pole				

Example for type-sign

Palm grip

Mechanical interlock

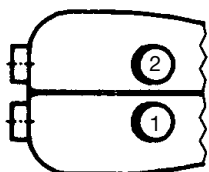
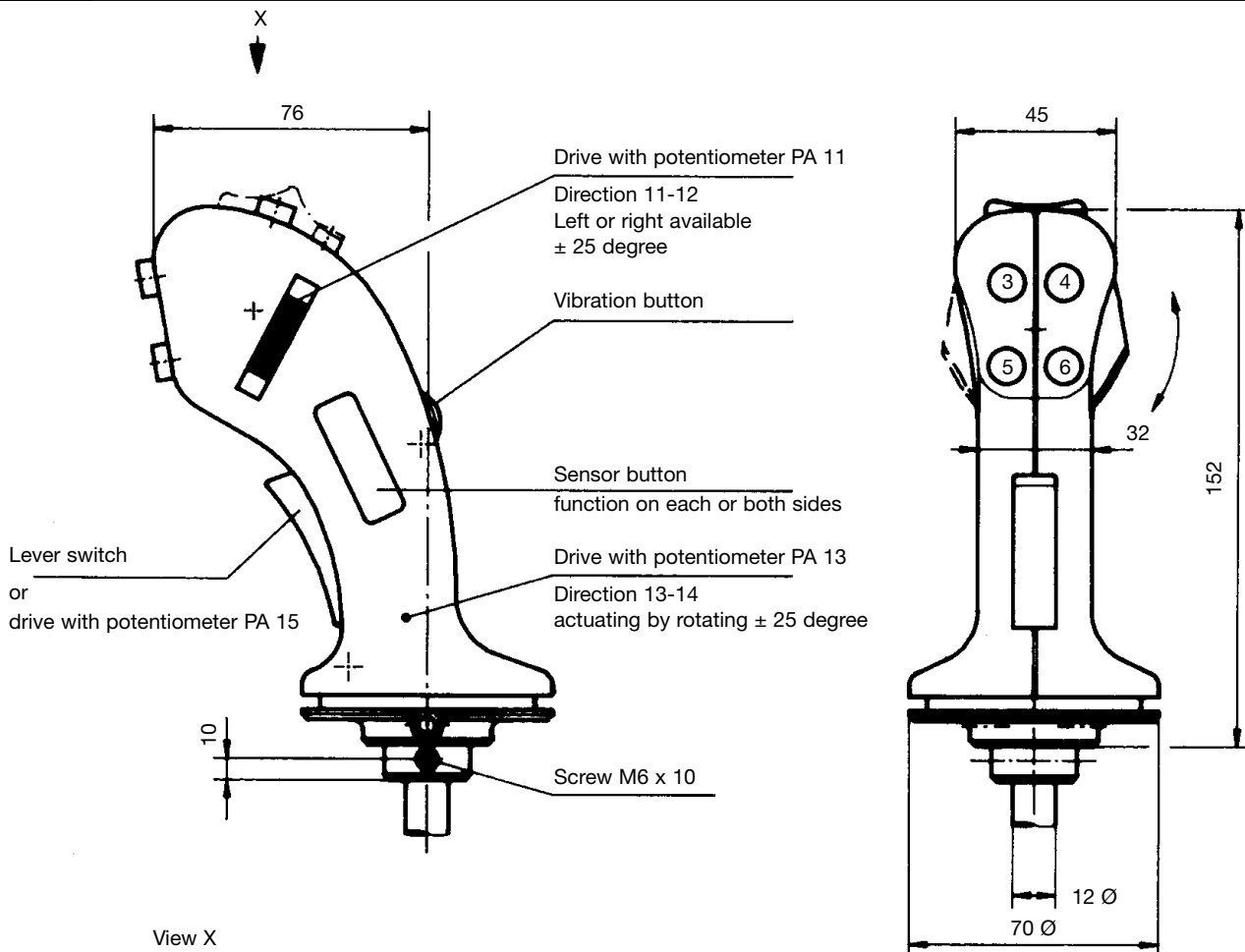
No. of contacts



Special please to describe

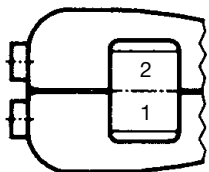
Impedance converter

Potentiometer e.t.c.

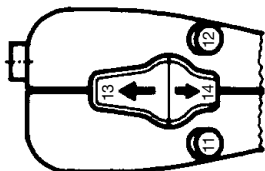


Edition:
Push button

Edition:
Vibrator button only one
Drive with potentiometer PA 13 version
Drive with potentiometer PA 15 possible



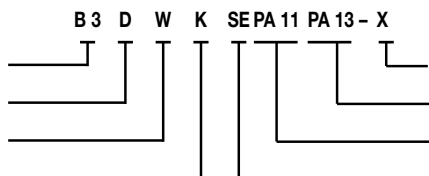
Edition:
Rocker switch
(installed Pos. 3, 4 inapplicable)



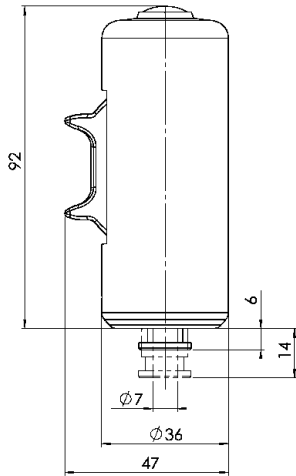
Edition:
Sliding switch installed Pos. 13, 14
installed Pos. 1, 2, 4, 6 inapplicable
Drive with potentiometer PA 12 direction 11 - 12 installed Pos. 11, 12
PA 11 inapplicable
Push button with 2 steps ZD installed Pos. 11 - 12
PA 11, 12 inapplicable

Example for type-sign

- Palm grip
- Push button
- Rocker switch
- Lever switch



- Special please to describe
- Drive with potentiometer PA 13
- Drive with potentiometer PA 11
- Sensor button



The palm grip B 4 is an actuating element for our multi-axis controller V 10, V 11, V 14. It can also be used as an actuating element for hydraulic drives. Push buttons, rocker switches, e.t.c., can also be fitted to suit appropriate requirements. The drive with potentiometer PA 11 realised the direction 11-12 (3. axis) on our multi-axis controllers.

The palm grip has a highly flexible single wire 0,1 mm² x 450 mm long.

The mounting piece for the drive rod can be supplied with a tapped hole 8 mm. The palm grip B 4 is made of PPO plastic and is black in colour.

Contact complement 0,5 A 110 V AC 15 res. 1,5 A 24 V DC 13
I min > 0,2 mA 2 V DC 12 Gold plated for max. load of 0,12 Watt (standard)
or I max < 300 mA 0,4 V DC 12 max. capacity 0,12 Watt do not exceed!
I min >0,2 mA 2 V DC 12 max. contact reliability for very low current (special)

Permissible ambient temperature

Operating -40°C to +60°C
Storage -50°C to +80°C

Climate resistance

DIN IEC 68 part 2-3

Damp heat constant

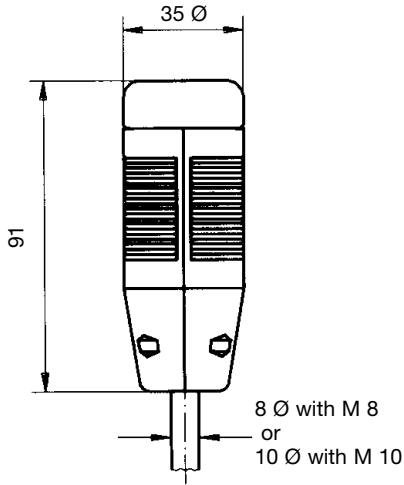
DIN IEC 68 part 2-30

Damp heat cyclic

IP 65 IEC 529 DIN 40050

Degree of protection front

Pos.			Weight gramm	Part No. 5288...	Type	Price EURO
1	Palm grip with mounting piece for control-handle		120		B 4	
2	Push button 1 NO 100 mA 24 V DC 13		20		D	
3						
5						
6						
10						
11	Drive with potentiometer PA 11 actuating by rocker wheel with spring return in the centre position 1 conductive-plastic potentiometer T 394 with centre tap Linear 10 ⁷ switching cycles resistance 2 x 5 kOhm 0,5 Watt wiper current max. 1 mA 2 direction-contacts		90		PA 11	
30						
31						
32						
33						



The palm grip B 5 is an actuating element for our multi-axis and single-axis controller. It can also be used as an actuating element for hydraulic drives. Push buttons, rocker switches, e.t.c., can also be fitted to suit appropriate requirements.

The palm grip has a highly flexible cable 4 (8) x 0,25 mm² x 450 mm long.

The mounting piece for the drive rod can be supplied with a tapped hole M 8 or M 10 (standard = M 10).

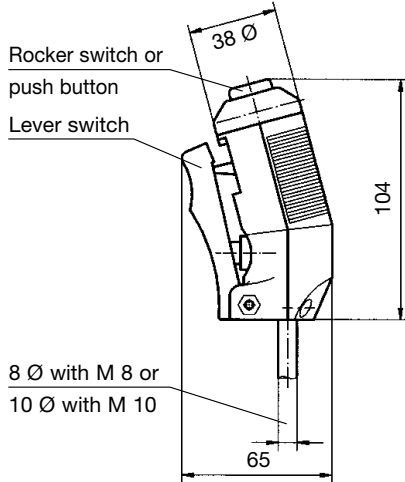
The palm grip B 5 is made of PPO plastic and is black in colour.

Contact complement 2 A 250 V AC 15 / 3 A 24 V DC 13
or 0,5 A 250 V AC 15 / 1,5 A 24 V DC 13

Permissible ambient temperature Operating -40°C to +60°C
Storage -50°C to +80°C

Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection front IP 54 IEC 529 DIN 40050

Pos.			Contact-complement	Weight gramm	Part No. 5289...	Type	Price EURO
1		without built in	KBAD / 254	100		B 5	
2		Rocker switch top tast-0-tast T-0-T	KBAD / 248	120		B 5 W	
3		Rocker switch top tast-0-rest T-0-R					
4		Rocker switch top rest-0-rest R-0-R					
5		Rocker switch top tast-0-tast with push button side	KBAD / 294	130		B 5 WD	
7		Push button top mechanical operation	KBAD / 311	120		B 5 T	
8		Push button top	KBAD / 250	100			
9		Push button top with 1 push button side	KBAD / 252	120		B 5 DD	
11		1 push button side	KBAD / 246	110		B 5 D	
12		2 push button side		120			
21		Cable 4 res. 8 x 0,25 mm ² x 450 mm long					
22		wired included in Pos. 1-12					
		Additional price per metre cable 4-pole					
		Additional price per metre cable 8-pole					



The palm grip B 6 is an actuating element for our multi-axis and single-axis controller. It can also be used as an actuating element with hydraulic drives. Push buttons, rocker switches, e.t.c., can also be fitted to suit appropriate requirements. These devices have micro changeover contacts.

The palm grip has a highly flexible cable 4 (8) x 0,25 mm² x 450 mm long.

The mounting piece for the drive rod can be supplied with a tapped hole M 8 or M 10 (standard = M 10).

The palm grip B 6 is made of PPO plastic and is black in colour.

Contact complement 2 A 250 V AC 15 / 3 A 24 V DC 13
or 0,5 A 250 V AC 15 / 1,5 A 24 V DC 13

Permissible ambient temperature Operating -40°C to +60°C
Storage -50°C to +80°C

Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection front IP 54 IEC 529 DIN 40050

Pos.			Contact-complement	Weight gramm	Part No. 5290...	Type	Price EURO
1		with built in lever switch side 0-tast	KBAD/ 1 change over contact 0,5 A 250 V AC 15	120		B 6 K	
2		Lever switch side 0-tast					
3		with rocker switch top tast-0-tast T-0-T					
4		with rocker switch top tast-0-rest T-0-R	KBAD/ 3 change over contacts 0,5 A 250 V AC 15	130		B 6 KW	
		with rocker switch top rest-0-rest R-0-R					
5		Lever switch side 0-tast with push button top	KBAD/ 2 change over contacts 0,5 A 250 V AC 15	130		B 6 KD	
21		Cable 4 res. 8 x 0,25 mm ² x 450 mm long wired included Pos. 1-5					
22		Additional price per metre cable 4-pole Additional price per metre cable 8-pole					





The palm grip B 7 is an actuating element for our multi-axis controller V 8, VV 8, V 6, VV 6, VV 5 design left, B 8 for design right.
It can also be used as an actuating element for hydraulic drives.
Push buttons, rocker switches, e.t.c., can also be fitted to suit appropriate requirements.

The palm grip has a highly flexible single wire 0,1 mm² x 450 mm long.

The mounting piece for the drive rod can be supplied with a tapped hole 12 or 10 mm (standard = 12 mm).

The palm grip B 7/8 is made of PPO plastic and is black in colour.

Contact complement 0,5 A 110 V AC 15 res. 1,5 A 24 V DC 13
I min > 0,2 mA 2 V DC 12 Gold plated for max. load of 0,12 Watt (standard)
or I max < 300 mA 0,4 V DC 12 max. capacity 0,12 Watt do not exceed!
I min >0,2 mA 2 V DC 12 max. contact reliability for very low current (special)

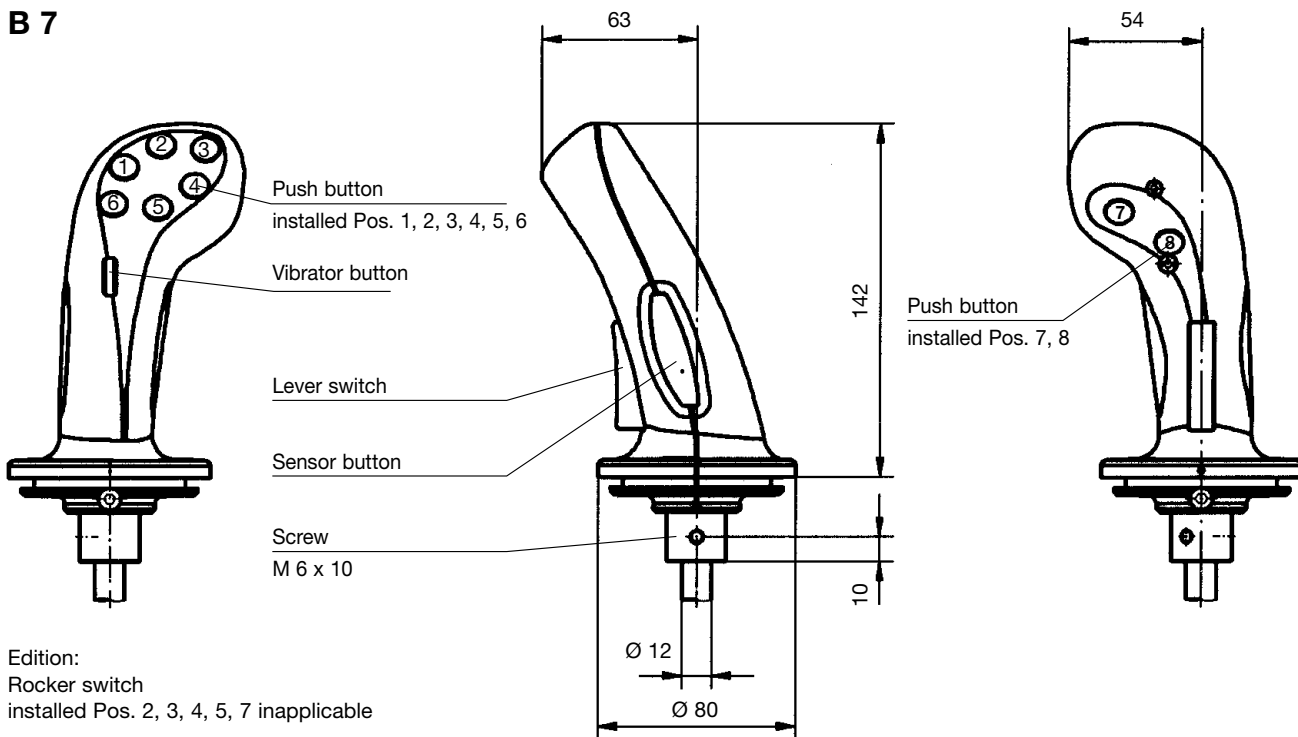
Permissible ambient temperature Operating -40°C to +60°C
Storage -50°C to +80°C

Climate resistance DIN IEC 68 part 2-3
Damp heat constant DIN IEC 68 part 2-30
Damp heat cyclic IP 65 IEC 529 DIN 40050
Degree of protection front

Pos.		Weight gramm	Part No. 5292...	Type	Price EURO
1	Palm grip with mounting piece for control-handle design left	200		B 7	
2	Palm grip with mounting piece for control-handle design right	200		B 8	
3	Push button 1 NO installed Pos. 1, 2, 3, 4, 5, 6, 7, 8	20		D	
4	Rocker switch tast-0-tast T-0-T 2 NO installed Pos. 2, 3, 4	30		W	
5	Rocker switch tast-0-rest T-0-R 2 NO installed Pos. 2, 3, 4	30		W	
6	Rocker switch rest-0-rest R-0-R 2 NO installed Pos. 2, 3, 4	30		W	
7	Lever switch 1 NO	30		K	
20	Vibrator button actuating through solenoid 24 V DC impulse signal 100% duty cycle factor	60		V	
21	Sensor button and res. or annexed with a regulator electronic board EY / 42-10 or -11 24 V DC (separate)	20		SE	
22					
23					
30	Bellow for palm grip B 7/8 drawing No. KMD 109 required for multi-axis controller V 8, VV 8				
31	Bellow for palm grip B 7/8 drawing No. KMD 190 and front plate with 4 screws M5 x 15 (for mounting the bellow) drawing No. KBF 905 required for multi-axis controller V 6, VV 6, VV 5				
32					
33					

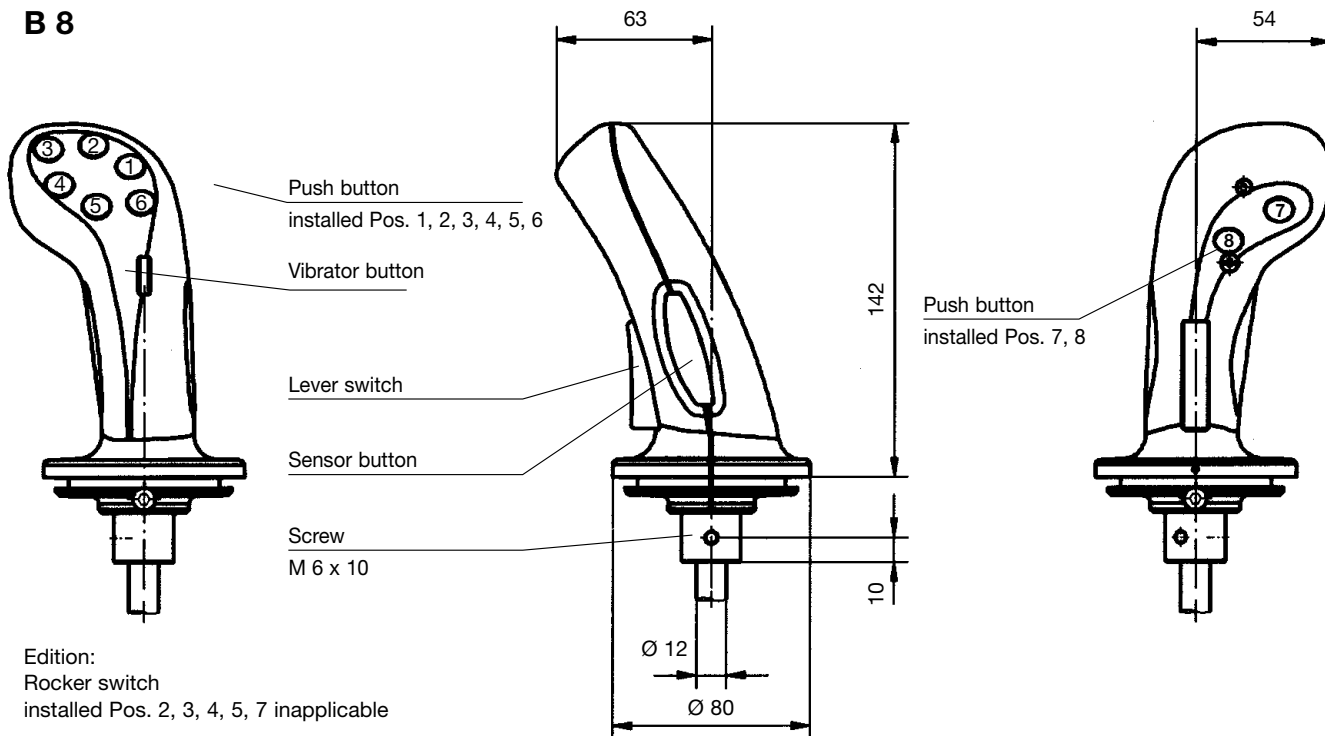


B 7



Edition:
Rocker switch
installed Pos. 2, 3, 4, 5, 7 inapplicable

B 8



Edition:
Rocker switch
installed Pos. 2, 3, 4, 5, 7 inapplicable

Example for type-sign

B 7 D K V SE - X

Palm grip
Push button
Lever switch



Special please to describe
Sensor button
Vibrator button



The palm grip B 9 is an actuating element for our multi-axis controller V 8, VV 8, V 6, VV 6, VV 5. It can also be used as an actuating element for hydraulic drives. Push buttons, rocker switches, e.t.c., can also be fitted to suit appropriate requirements. The drives with potentiometer PA 11 and PA 13 realised the direction 11-12 resp. 13-14 (3. resp. 4 axis) on our multi-axis controllers.

The palm grip has a highly flexible single wire 0,1 mm² x 450 mm long.

The mounting piece for the drive rod can be supplied with a tapped hole 12 or 10 mm (standard = 12 mm).

The palm grip B 9 is made of PA plastic and is grey in colour.

Contact complement 0,5 A 110 V AC 15 res. 1,5 A 24 V DC 13
I min > 0,2 mA 2 V DC 12 Gold plated for max. load of 0,12 Watt (standard)
or I max < 300 mA 0,4 V DC 12 max. capacity 0,12 Watt do not exceed!
I min >0,2 mA 2 V DC 12 max. contact reliability for very low current (special)

Permissible ambient temperature

Operating -40°C to +60°C
Storage -50°C to +80°C

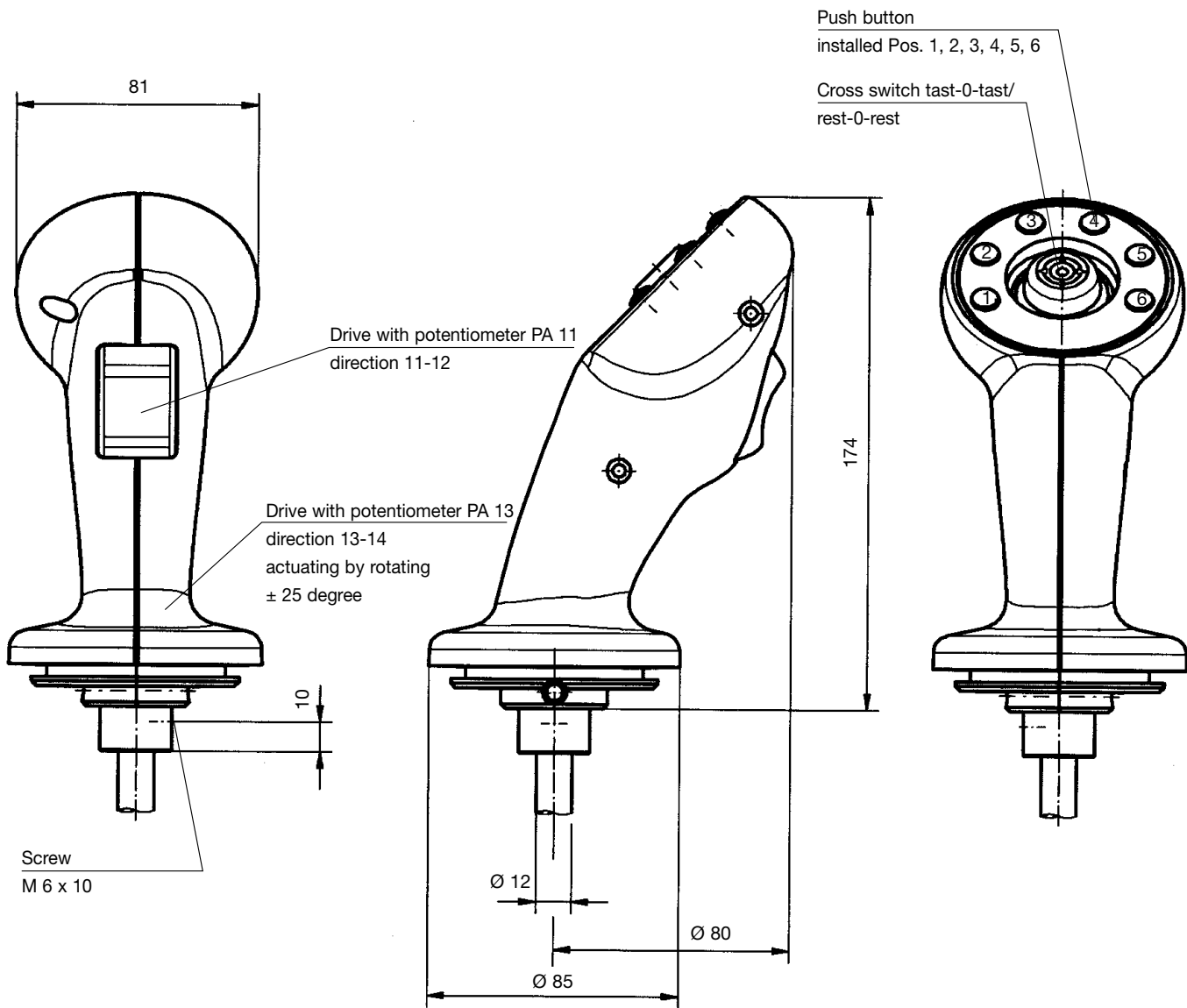
Climate resistance
Damp heat constant

DIN IEC 68 part 2-3
DIN IEC 68 part 2-30

Degree of protection front

IP 65 IEC 529 DIN 40050

Pos.		Weight gramm	Part No. 5294...	Type	Price EURO
1	Palm grip with mounting piece for control-handle	230		B 9	
2	Push button 1 NO installed Pos. 1, 2, 3, 4, 5, 6	20		D	
3	Cross switch tast-0-tast T-0-T / T-0-T 4 NO	60		KT	
5	Cross switch rest-0-rest R-0-R / R-0-R 4 NO	60		KR	
6					
10					
11	Drive with potentiometer PA 11 actuating by rocker wheel with spring return in the centre position 1 conductive-plastic potentiometer T 394 with centre tap Linear 10 ⁷ switching cycles resistance 2 x 5 kOhm 0,5 Watt wiper current max. 1 mA, 2 direction-contacts	90		PA 11	
13	Drive with potentiometer PA 13 actuating by rotating palm grip left resp. right with spring return in the centre position 1 conductive-plastic potentiometer T 375 with centre tap Linear 10 ⁷ switching cycles resistance 2 x 5 kOhm 0,5 Watt wiper current max. 1 mA, 2 direction-contacts	90		PA 13	
30	Bellow for palm grip B 9 drawing No. KMD 109 required for multi-axis controller V 8, VV 8				
31	Bellow for palm grip B 9 drawing No. KMD 190 and front plate with 4 screws M5 x 15 (for mounting the bellow) drawing No. KBF 905 required for multi-axis controller V 6, VV 6, VV 5				
32					
33					



Example for type-sign

B 9 D KT PA 11 PA 13 - X

- Palm grip
- Push button
- Cross switch



Special please to describe
Drive with potentiometer PA 13
Drive with potentiometer PA 11



The palm grip B 10-1 is an actuating element for double-handle controller D 64, DD 64, D8. Control-handle left, B10-2 for control-handle right. It can also be used as an actuating element for hydraulic drives. Push buttons, rocker switches, e.t.c., can also be fitted to suit appropriate requirements.

The palm grip has a highly flexible single wire 0,1 mm² x 450 mm long.

The mounting piece for the drive rod can be supplied with a tapped hole 10 mm. The palm grip B 10 is made of PPO plastic and is black in colour.

Contact complement 0,5 A 110 V AC 15 res. 1,5 A 24 V DC 13
I min > 0,2 mA 2 V DC 12 Gold plated for max. load of 0,12 Watt (standard)
or I max < 300 mA 0,4 V DC 12 max. capacity 0,12 Watt do not exceed!
I min >0,2 mA 2 V DC 12 max. contact reliability for very low current (special)

Permissible ambient temperature

Operating -40°C to +60°C
Storage -50°C to +80°C

Climate resistance

Damp heat constant

Damp heat cyclic

Degree of protection front

DIN IEC 68 part 2-3

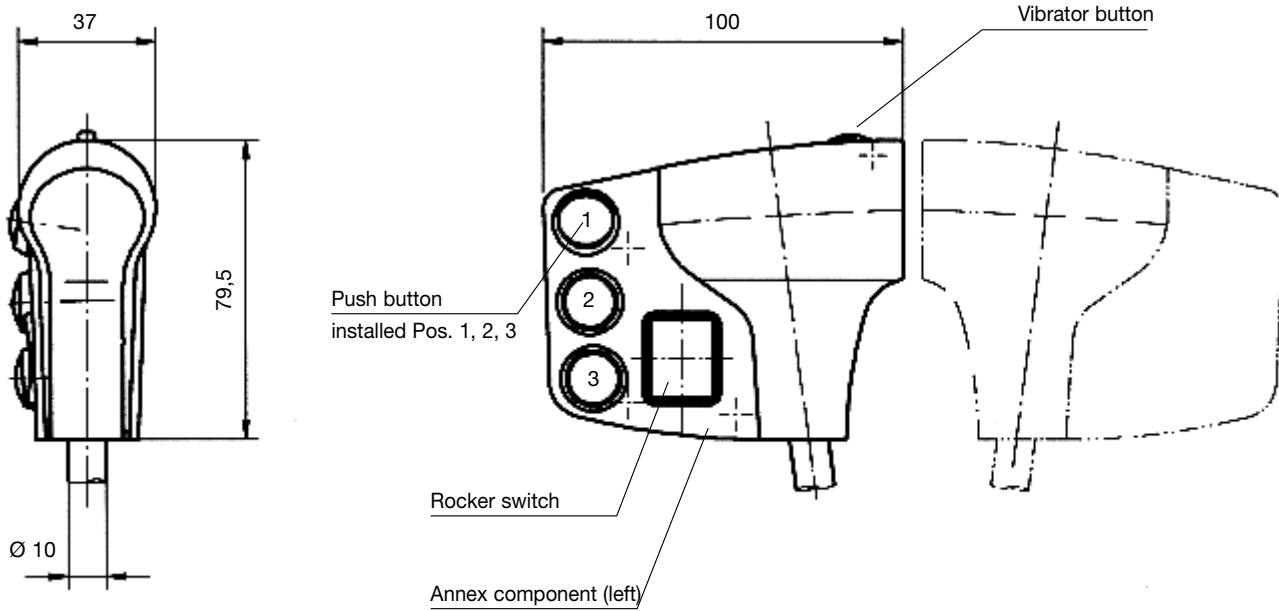
DIN IEC 68 part 2-30

IP 65 IEC 529 DIN 40050

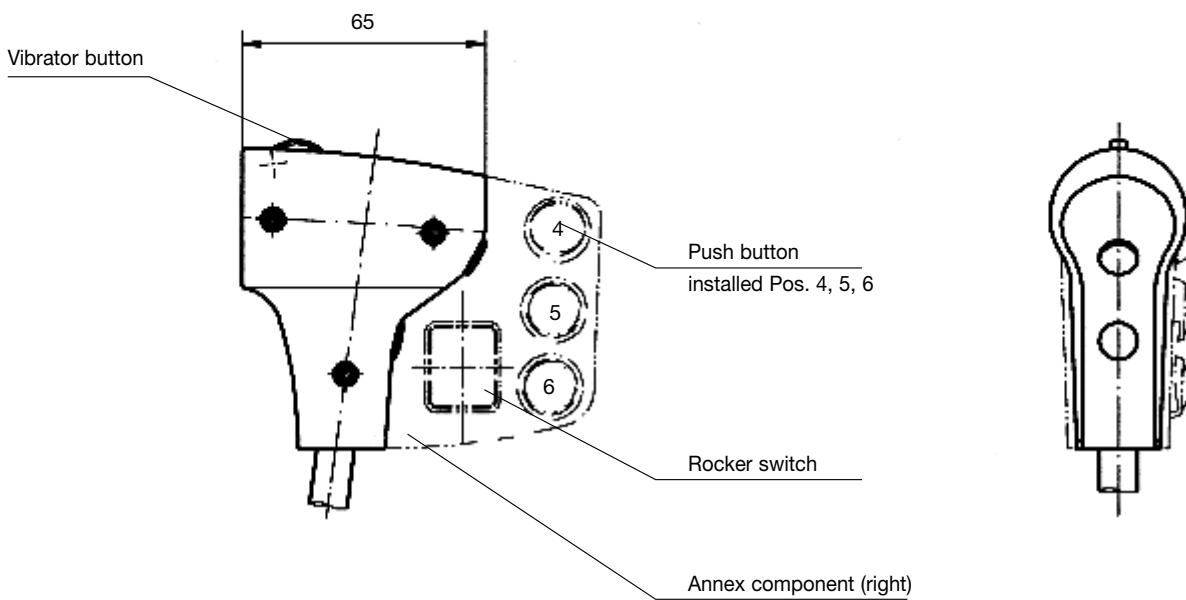
Pos.		Weight gramm	Part No. 5296...	Type	Price EURO
1	Palm grip with mounting piece for control-handle left	100		B 10-1	
2	Palm grip with mounting piece for control-handle left with annex component	130		B 10-1-1	
3	Palm grip with mounting piece for control-handle right	100		B 10-2	
4	Palm grip with mounting piece for control-handle right with annex component	130		B 10-2-2	
5	Push button 1 NO B 10-1 installed Pos. 1, 2, 3 B 10-2 installed Pos. 4, 5, 6	30		D	
6	Rocker switch tast-0-tast T-0-T 2 NO	30		W	
7	Rocker switch tast-0-rest T-0-R 2 NO	30		W	
8	Rocker switch rest-0-rest R-0-R 2 NO	30		W	
20	Vibrator button actuating through solenoid 24 V DC impulse signal 100% duty cycle factor	60		V	



B 10-1



B 10-2



Example for type-sign

B 10-1 - 1 D W V - X

Palm grip

Palm grip with annex component

Push button



Special please to describe

Vibrator button

Rocker switch



Pos.	Dimension outside in mm	Dimension inside in mm	Remarks	Weight kg	Part No.	Type	Price EURO
Steel sheet housing material thickness 1/1,5 mm Protection IP 54 painting RAL 7032 pebble-grey							
1	200 x 200 x 92	166 x 166 x 90		1,3		B 200	
2	230 x 230 x 105	196 x 196 x 102		1,4		B 230	
3	230 x 340 x 105	196 x 306 x 102		1,5		B 230 x 340	
4	230 x 440 x 105	196 x 406 x 102		1,6		B 230 x 440	
5	250 x 250 x 150	216 x 216 x 147		1,6		B 250 x 250	
6							
7	150 x 400 x 105	116 x 366 x 102		3,2		B 150 x 400	
8	150 x 500 x 105	116 x 466 x 102		3,5		B 150 x 500	
9	150 x 600 x 105	116 x 566 x 102		3,8		B 150 x 600	
10	260 x 500 x 105	226 x 466 x 102		3,8		B 260 x 500	
11	260 x 600 x 105	226 x 566 x 102		4,2		B 260 x 600	
12	Dimensions special		on enquiry				
Plastic housing polycarbonat Protection IP 65 colour RAL 7035 fair-grey							
13	120 x 122 x 105	113 x 115 x 98		0,35		I 120 x 122	
14	120 x 160 x 140	113 x 134 x 133		0,6		I 120 x 160	
15	160 x 240 x 120	153 x 215 x 114		0,8		I 160 x 240	
16	160 x 360 x 100	153 x 352 x 94		1,0		I 160 x 360	
17	230 x 300 x 110	223 x 293 x 103		1,15		I 230 x 300	
18							
19							
20							
21							
22							
Plastic housing polyester Protection IP 65 colour RAL 7000 grey							
23	220 x 335 x 115	200 x 292 x 108	colour alternative RAL 9011 black	1,65		I 220 x 335	
24	220 x 465 x 115	200 x 432 x 108	colour alternative RAL 9011 black	2,24		I 220 x 465	
25	250 x 255 x 120	236 x 243 x 110		2,65		I 250 x 255	
26	250 x 400 x 120	236 x 386 x 110		3,65		I 250 x 400	
27	250 x 600 x 120	236 x 586 x 110		5,24		I 250 x 600	
28							
29							
30							
31							
32							
Accessory parts							
33	Hinges each housing (2 pcs.)			0,2			
34	Armrest with clamp adjustable straps			0,5			
35	Chest panel and straps			0,6			
36	Base bracket each housing (2 pcs.)			0,3			
37	Filter plug M 20		for air-condition	0,15			
38	Cable entry M 20 cable 7–13 mm		with anti-kink protection and strain relief	0,15			
39	Cable entry M 32 cable 11–21 mm		with anti-kink protection and strain relief	0,2			
40	Cable entry M 40 cable 19–28 mm		with anti-kink protection and strain relief	0,25			
41	Pillar with flange 100 x 100 x 535 mm high		flange 150 x 150 mm	14,0			
42	Indicating labels not engraved						
43	Engraved each 10 characters						
44							
45							





Manufacture Siemens 3 SB 22 mm

Pos.	Command devices		Weight gramm	Part No.	Type	Price EURO
1	Push button	1 NO + 1 NC	40		D	
2	Selector switch 0-1	2 positions 1 NO + 1 NC	50		W	
3	Selector switch 1-0-2	3 positions 2 NO + 2 NC	60		W	
4						
5						
6	Key switch 0-1	2 positions 1 NO + 1 NC	130		S	
7	Key switch 1-0-2	3 positions 2 NO + 2 NC	140		S	
8						
9						
10	Mushroom key switch latching	1 NO + 1 NC	80		PS	
11	Mushroom head push button latching	1 NC	60		PV	
12						
13						
14						
15	Contact block additional (max. 3 pcs.)	1 NO + 1 NC	10			
	Command and indicating devices					
16	Illuminated push button lamp 24 V AC	1 NO + 1 NC	40		LD	
17	Illuminated push button lamp 110 V operating voltage 220 V AC	1 NO + 1 NC	40		LD	
18	Illuminated push button lamp 24 V with transformer 220/24 V AC	1 NO + 1 NC	50		LD	
19						
20	Contact block additional (max. 3 pcs.)	1 NO + 1 NC	10			
	Indicating devices					
21	Indicator light lamp 24 V AC		40		L	
22	Indicator light lamp 110 V operating voltage 220 V AC		40		L	
23	Indicator light lamp 24 V with transformer 220/24 V AC		50		L	
24						
25						
	Special devices					
26	Drilling diameter 22 mm					
27	Blind plug 22					
28						
29						
30	Push button with 2 steps RTTG22KLK../MHR3/MT97/MTO	2 NO + 1 NC	200			
31	Push button with 2 steps XB 2 - BA 243	2 NO + 1 NC	250			
32						
33						
34						
35						
36						
37						
38						
39						
40						



Manufacture Siemens 3 SB 30 mm

Pos.	Command devices		Weight gramm	Part No.	Type	Price EURO
1	Push button	1 NO + 1 NC	50		D	
2	Selector switch 0-1	2 positions 1 NO + 1 NC	60		W	
3	Selector switch 1-0-2	3 positions 2 NO + 2 NC	70		W	
4						
5						
6	Key switch 0-1	2 positions 1 NO + 1 NC	140		S	
7	Key switch 1-0-2	3 positions 2 NO + 2 NC	150		S	
8						
9						
10	Mushroom key switch latching	1 NO + 1 NC	90		PS	
11	Mushroom head push button latching	1 NC	70		PV	
12						
13						
14						
15	Contact block additional (max. 3 pcs.)	1 NO + 1 NC	10			
	Command and indicating devices					
16	Illuminated push button lamp 24 V AC	1 NO + 1 NC	50		LD	
17	Illuminated push button lamp 110 V operating voltage 220 V AC	1 NO + 1 NC	50		LD	
18	Illuminated push button lamp 24 V with transformer 220/24 V AC	1 NO + 1 NC	60		LD	
19						
20	Contact block additional (max. 2 pcs.)	1 NO + 1 NC	10			
	Indicating devices					
21	Indicator light lamp 24 V AC		50		L	
22	Indicator light lamp 110 V operating voltage 220 V AC		50		L	
23	Indicator light lamp 24 V with transformer 220/24 V AC		60		L	
24						
25						
	Special devices					
26	Drilling diameter 30 mm					
27	Blind plug 30					
28						
29	Push button with 2 steps SES 2	2 NO + 1 NC	300			
30	Push button with 2 steps ST 1-3-2	2 NO + 1 NC	300			
31	Push button with 3 steps ST 1-4-3	3 NO + 1 NC	350			
32	Push button with 4 steps ST 1-5-4	4 NO + 1 NC	400			
33	Push button with potentiometer PT 1-2-P	1 NO + 1 NC	350			
34	Wire-wound potentiometer T 237 linear Life 10 ⁶ switching cycles					
35	resistance 0,5/1,0/2,0/5,0 kOhm 1 Watt wiper current max. 10 mA					
36	Drive for potentiometer KEQ/418 with friction brake (potentiometer look 1/240)		250			
37	Summer EKS 24 V DC / 48 V AC / 220 V AC		250			
38	Knee button FAK-S/KC/I	1 NO + 1 NC	350			
39	Foot button 3SE 3902-OAB20	1 NO + 1 NC	450			
40						



Driver's seat KFS 4 as shown

The crane control unit KST 2 combines in its design the crane driver's seat and the control and monitoring devices. Ready wired, it can be easily and quickly installed in the crane cabin.

Equipment boxes: Sheet steel.

The equipment boxes with the devices fitted have hinged tops that can be locked in position. They contain the termination and connection facilities and a lockable plug-in cover on the inside.

Seat KFS 2: The seat backrest can be tipped forwards and further tipped together with the cushion.

The cushion and seat backrest are padded.

Adjusting possibilities: Cushion horizontally and vertically.

Height adjustment via a gas-loaded spring in the seat base.

Seat backrest horizontally and vertically to the cushion.

Armrests padded and adjustable in height.

Fixed to the equipment boxes.

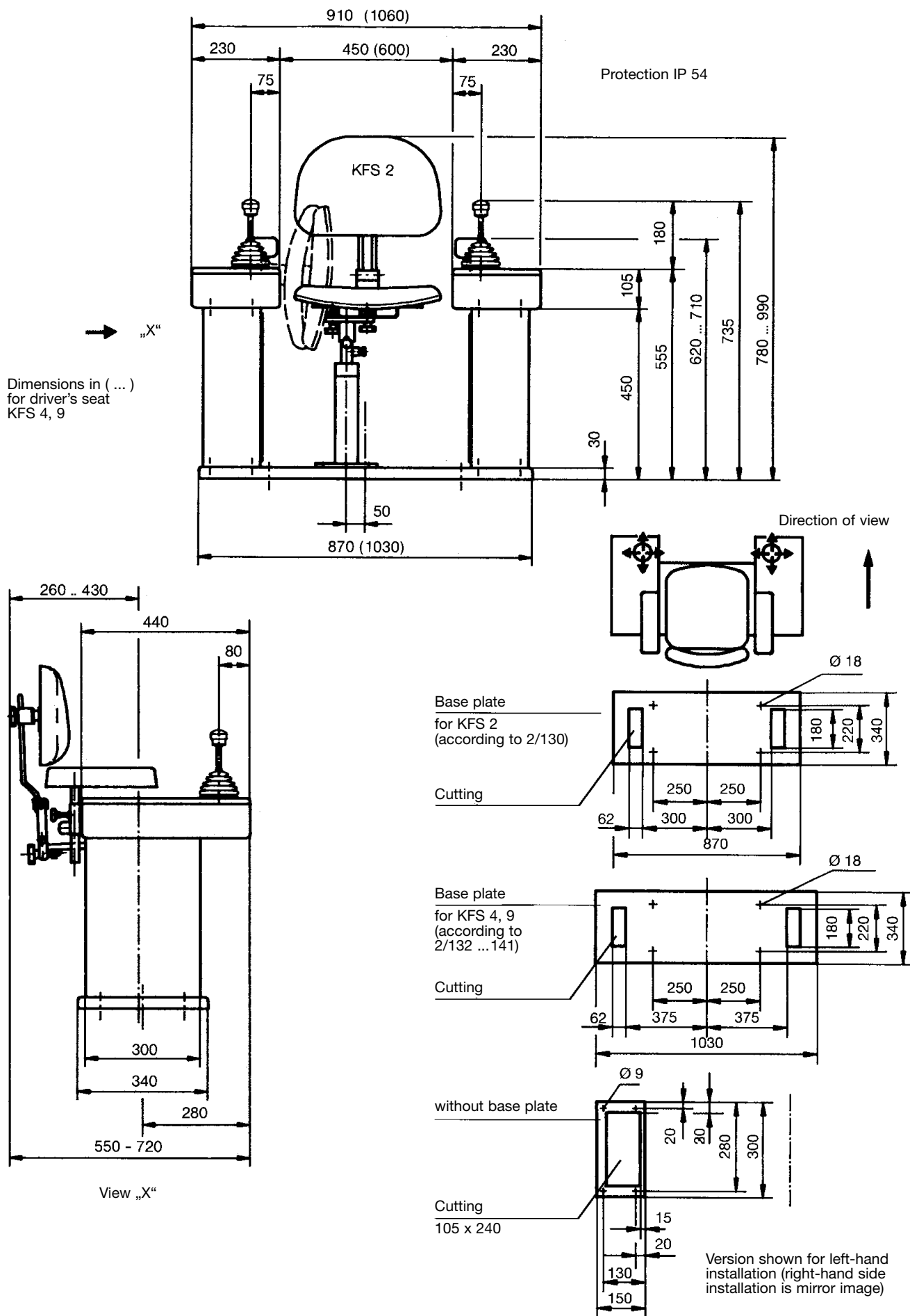
Surface treatment: Anti-corrosion primer, top coat: 2 coats of epoxy-resin paint, standard colour RAL 7032 pebble-grey.

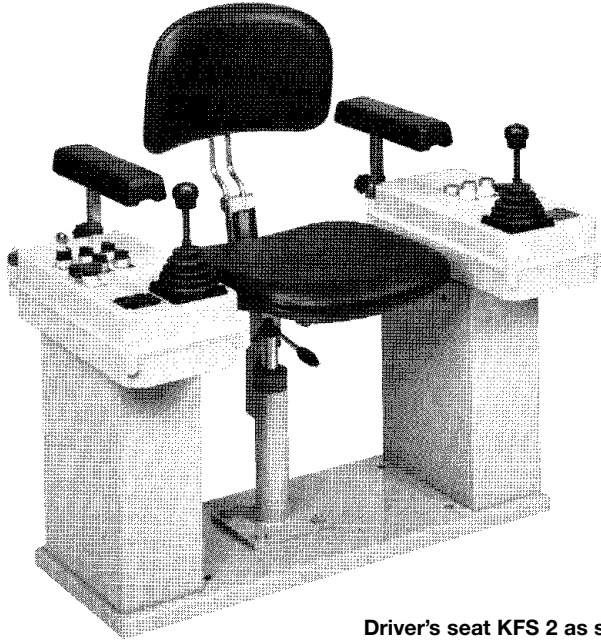
All non-painted metal parts are electrogalvanized and chromed.

Description data look catalog 5/003/004

Permissible ambient temperature	Operation -40° C to +60° C
	Storage -50° C to +80° C
Climate resistance	
Damp heat constant	DIN IEC 68 part 2-3
Damp heat cyclic	DIN IEC 68 part 2-30
Degree of protection	IP 54 IEC 529 DIN 40050

Pos.				Weight kg	Part No.	Type	Price EURO
1	Crane control unit with driver's seat	KFS 2	with base plate	38		KST 2	
2	Crane control unit with driver's seat	KFS 2	without base plate	33		KST 21	
3	Crane control unit without driver's seat	KFS 2	with base plate	23		KST 22	
4	Crane control unit without driver's seat	KFS 2	without base plate	18		KST 23	
5							
10	Driver's seat	look catalog 2/130				KFS 2	
11							
12	Driver's seat	look catalog 2/132 (picture shows)				KFS 4	
13							
14							
15	Driver's seat	look catalog 2/140				KFS 9	
20	Multi-axis controller	look catalog 1/100					
21	Single-axis controller	look catalog 1/200					
22							
23	Control-switch	look catalog 1/220					
24	Command and indicating devices	look catalog 1/360					
25							
30	Terminal block 4 mm ² without wiring each terminal					KL	
31	Terminal block 4 mm ² with wiring wire 1,5 mm ² each terminal					KL	
32	External wiring single wire highly flexible 1,5 mm ² 5 metre long						
33	Additional or subtract price each metre						
34							
35							
40	Special painted						
41	Indicating labels not engraved with 2 or 4 arrows						
42	Engraved each 10 characters						
43							





Driver's seat KFS 2 as shown

The crane control unit KST 3 combines in its design the crane driver's seat and the control and monitoring devices. Ready wired, it can be easily and quickly installed in the crane cabin.

Equipment boxes: Plastic polyester.
The equipment boxes with the devices fitted have hinged tops that can be locked in position. They contain the termination and connection facilities and a lockable plug-in cover on the inside.

Seat KFS 2: The seat backrest can be tipped forwards and further tipped together with the cushion.
The cushion and seat backrest are padded.

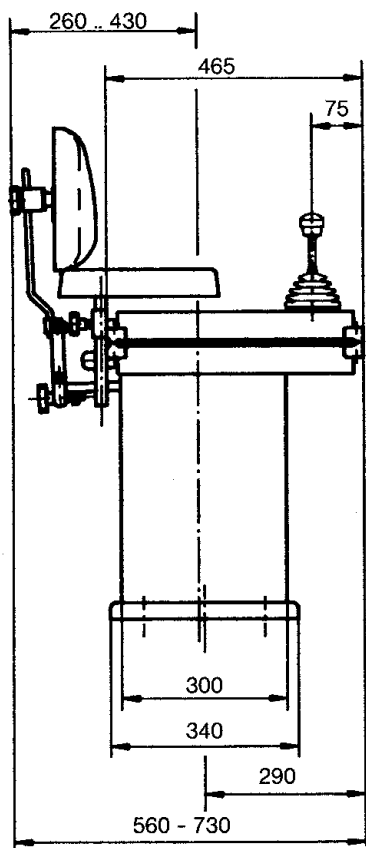
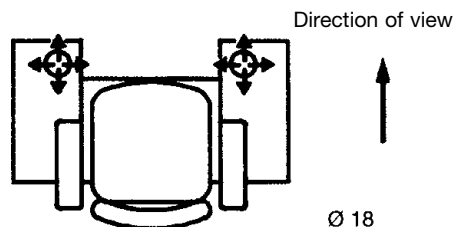
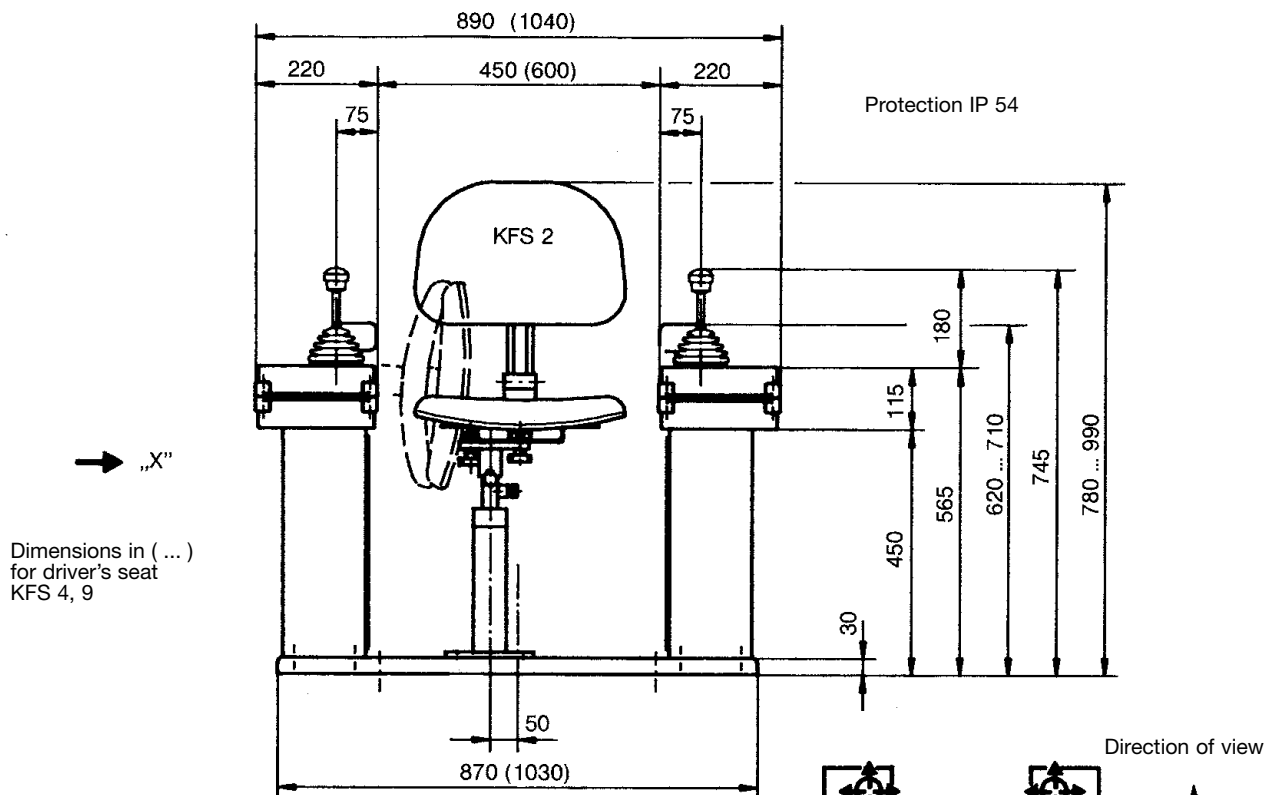
Adjusting possibilities: Cushion horizontally and vertically.
Height adjustment via a gas-loaded spring in the seat base.
Seat backrest horizontally and vertically to the cushion.
Armrests padded and adjustable in height.
Fixed to the equipment boxes.

Surface treatment: Anti-corrosion primer, top coat: 2 coats of epoxy-resin paint, standard colour RAL 7032 pebble-grey.
All non-painted metal parts are electrogalvanized and chromed.

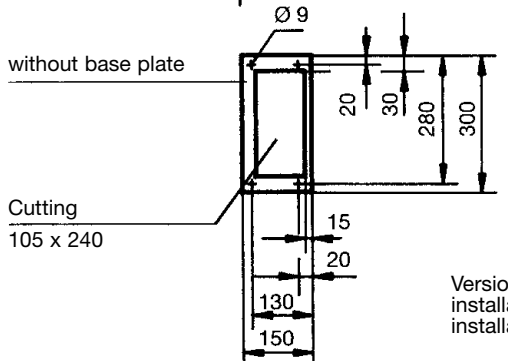
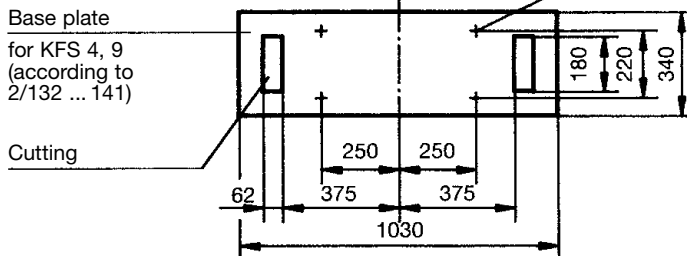
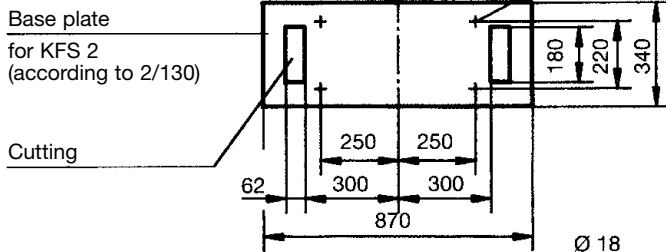
Description data look catalog 5/003/004

Permissible ambient temperature	Operation -40° C to +60° C
	Storage -50° C to +80° C
Climate resistance	
Damp heat constant	DIN IEC 68 part 2-3
Damp heat cyclic	DIN IEC 68 part 2-30
Degree of protection	IP 54 IEC 529 DIN 40050

Pos.				Weight kg	Part No.	Type	Price EURO
1	Crane control unit with driver's seat	KFS 2	with base plate	36		KST 3	
2	Crane control unit with driver's seat	KFS 2	without base plate	31		KST 31	
3	Crane control unit without driver's seat	KFS 2	with base plate	21		KST 32	
4	Crane control unit without driver's seat	KFS 2	without base plate	16		KST 33	
5							
10	Driver's seat	look catalog 2/130 (picture shows)				KFS 2	
11							
12	Driver's seat	look catalog 2/132				KFS 4	
13							
14							
15	Driver's seat	look catalog 2/140				KFS 9	
20	Multi-axis controller	look catalog 1/100					
21	Single-axis controller	look catalog 1/200					
22							
23	Control-switch	look catalog 1/220					
24	Command and indicating devices	look catalog 1/360					
25							
30	Terminal block 4 mm ² without wiring each terminal					KL	
31	Terminal block 4 mm ² with wiring wire 1,5 mm ² each terminal					KL	
32	External wiring single wire highly flexible 1,5 mm ² 5 metre long						
33	Additional or subtract price each metre						
34							
35							
40	Special painted						
41	Indicating labels not engraved with 2 or 4 arrows						
42	Engraved each 10 characters						
43							



View „X“



Version shown for left-hand installation (right-hand side installation is mirror image)



The swivelling crane control unit KST 4 is ergonomically designed and provides a high degree of comfort.

The standard design includes following:

Equipment boxes: Sheet steel.

The equipment boxes with the devices can be vertically and horizontally adjusted together with the armrests. Cabling is run through duct in the cross-member. (Terminal block).

Seat: Comfortable spring mounted seat KFS 9, with an oilhydraulic vibration absorption system, weight adjustment and air-permeable artificial leather or textil material.

Adjusting possibilities: Seat horizontally and vertically. Inclination of cushion, backrest and armrest also adjustable. Weight setting for optimum spring suspension, right equipment box turnable.

Cross-member: Steel selection, top of which can be raised to lay cabling. The seat can be tilted backwards so that the cable duct in the cross-member is accessible.

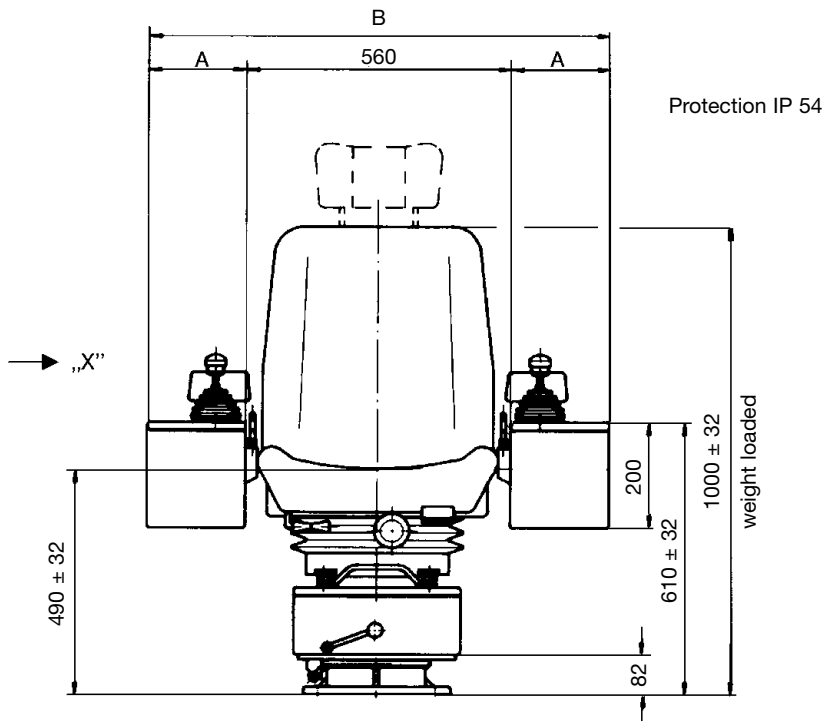
Swivel base: Zero-end-float spring-loaded bearing. Rotational movement 180° right, 90° left, stopped by friction brake.

Surface treatment: Anti-corrosion primer, top coat: 2 coats of epoxy-resin paint, standard colour RAL 9011 black. All non-painted metal parts are electrogalvanized and chromed.

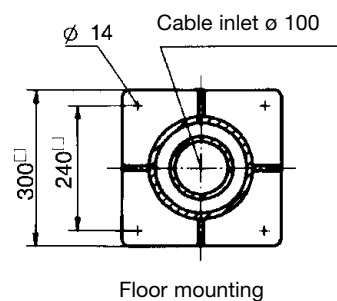
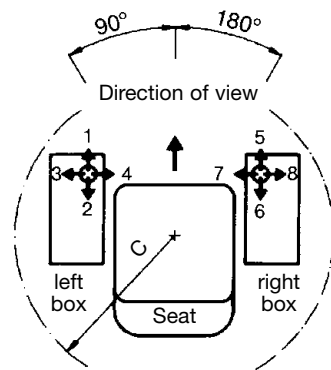
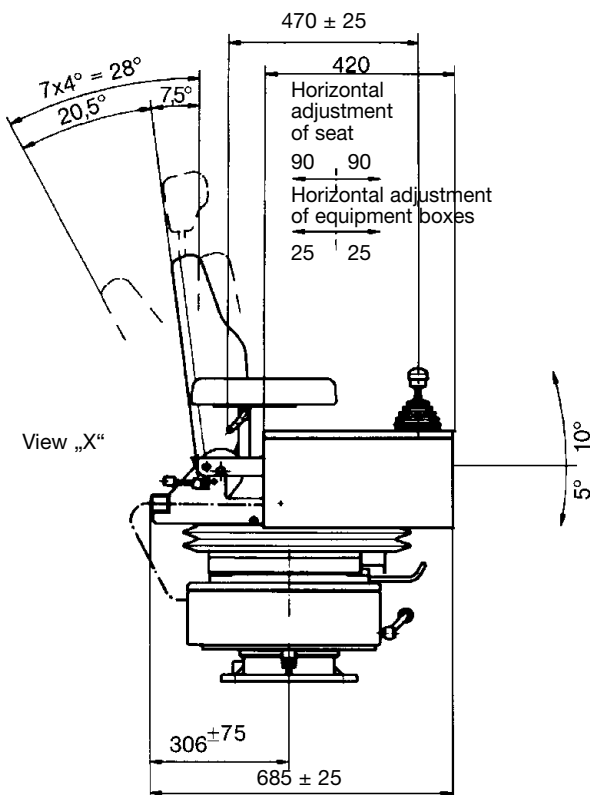
Permissible ambient temperature	Operation -40° C to +60° C
	Storage -50° C to +80° C
Climate resistance	
Damp heat constant	DIN IEC 68 part 2-3
Damp heat cyclic	DIN IEC 68 part 2-30
Degree of protection	IP 54 IEC 529 DIN 40050

Description data look catalog 5/003/004

Pos.			Weight kg	Part No.	Type	Price EURO
1	Crane control unit standard design	Equipment boxes 160 x 420 mm	58		KST 41	
2	Crane control unit standard design	Equipment boxes 200 x 420 mm	60		KST 42	
3						
4						
5	Crane control unit standard design	Equipment boxes special dimensions			KST 4x	
6	Headrest for driver's seat KFS 9					
7	additional variations for driver's seat KFS 9 look catalog 2/140					
8						
9						
10	Footrest mounted onto swivel base adjustable ± 15 mm		8			
11						
12						
13	Plate for horizontal manual adjustment of control unit adjustable ± 250 mm					
14						
15						
16						
17						
18						
19	Heating 2 x 2 kW with ventilator 230 V 50 Hz airvolume ca. 300 m³/h mounted on the swivel base sidewise					
20	Multi-axis controller	look catalog 1/100				
21	Single-axis controller	look catalog 1/200				
22	Double-handle controller	look catalog 1/160				
23	Control-switch	look catalog 1/220				
24	Command and indicating devices	look catalog 1/360				
30	Terminal block 4 mm² without wiring each terminal				KL	
31	Terminal block 4 mm² with wiring wire 1,5 mm² each terminal				KL	
32	External wiring single wire highly flexible 1,5 mm² 5 metre long					
33	Additional or subtract price each metre					
40	Special painted					
41	Indicating labels not engraved with 2 or 4 arrows					
42	Engraved each 10 characters					



Type	Dimension A	Dimension B	Dimension C
KST 41	160	880	650
KST 42	200	960	690





The swivelling crane control unit KST 5 is ergonomically designed and provides a high degree of comfort.

The standard design includes following:

Equipment boxes: Sheet steel. The top panel of the equipment boxes with the devices can be raised and locked in position. The terminal strip is easily accessible via an opening on the inside that can be closed with a lockable cover.

Seat: Comfortable spring mounted seat KFS 9, with an oilhydraulic vibration absorption system, weight adjustment and air-permeable artificial leather or textil material.

Adjusting possibilities: Seat horizontally and vertically. Inclination of cushion, backrest and armrest also adjustable. Weight setting for optimum spring suspension.

Cross-member: Steel section, top of which can be raised to lay cabling. The seat can be tilted backwards so that the cable duct in the cross-member is accessible.

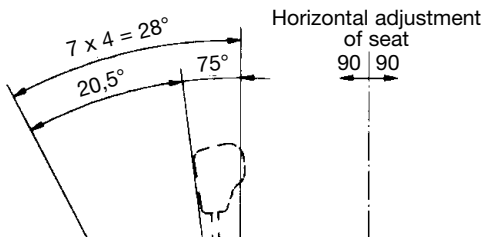
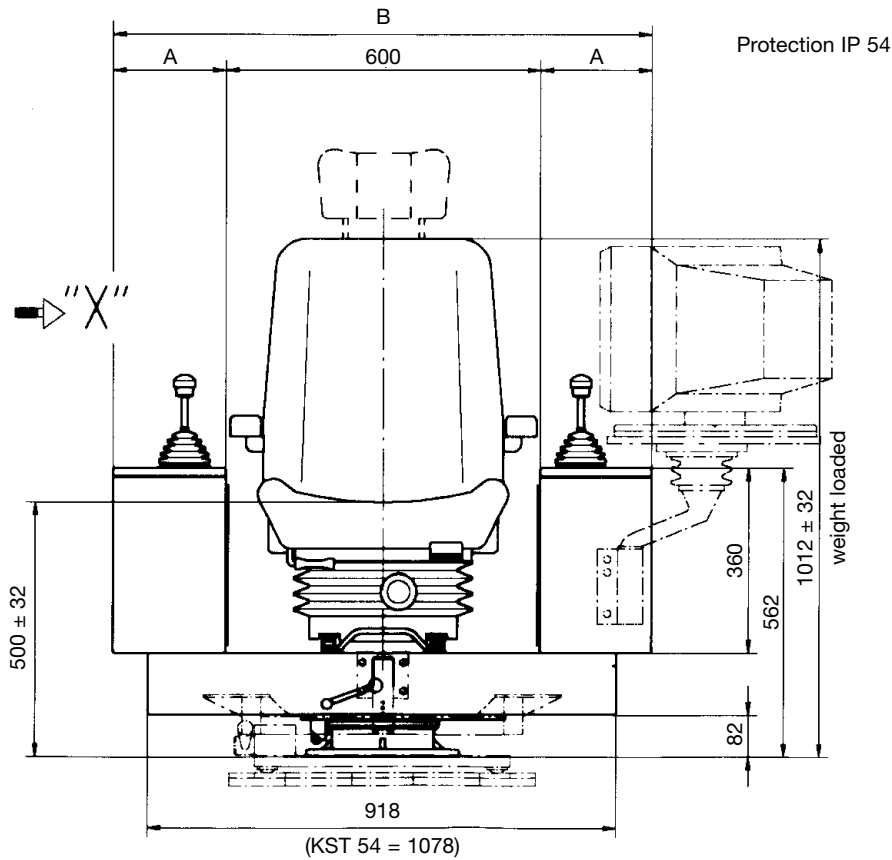
Swivel base: Zero-end-float spring-loaded bearing. Rotational movement 180° right, 90° left, stopped by friction brake.

Surface treatment: Anti-corrosion primer, top coat: 2 coats of epoxy-resin paint, standard colour RAL 7032 pebble-grey. All non-painted metal parts are electrogalvanized and chromed.

Description data look catalog 5/003/004

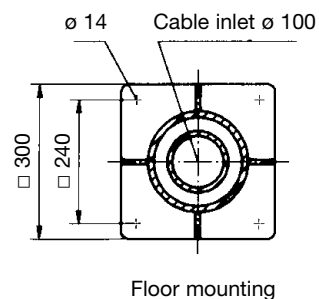
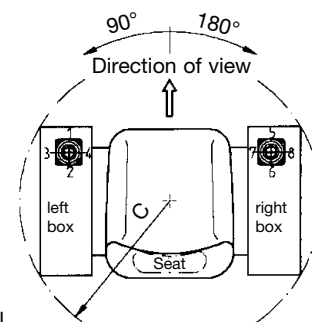
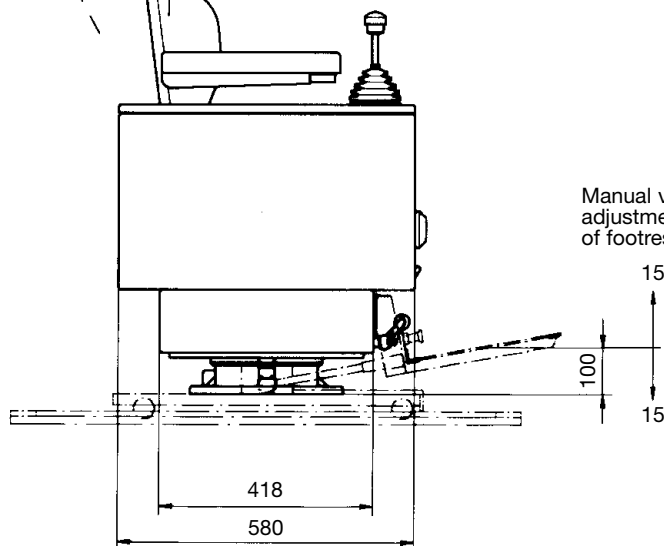
Permissible ambient temperature	Operation -40° C to +60° C
	Storage -50° C to +80° C
Climate resistance	
Damp heat constant	DIN IEC 68 part 2-3
Damp heat cyclic	DIN IEC 68 part 2-30
Degree of protection	IP 54 IEC 529 DIN 40050

Pos.			Weight kg	Part No.	Type	Price EURO
1	Crane control unit standard design	Equipment boxes 200 x 580 mm	84		KST 51	
2	Crane control unit standard design	Equipment boxes 270 x 580 mm	88		KST 52	
3						
4	Crane control unit standard design	Equipment boxes 320 x 580 mm	92		KST 54	
5	Crane control unit standard design	Equipment boxes special dimensions			KST 5x	
6	Headrest for driver's seat KFS 9					
7	additional variations for driver's seat KFS 9 look catalog 2/140					
8	Driver's seat KFS 10 look catalog 2/142				KFS 10	
9	Monitor mounting support left or right T 478		10			
10	Footrest mounted onto swivel base adjustable ± 15 mm		8			
11						
12	Manual adjustment of equipment boxes horizontal adjustable ± 75 mm					
13	Plate for horizontal manual adjustment of control unit adjustable ± 250 mm		95			
14	Manual adjustment of control unit vertical (gas loaded spring) adjustable 80 mm		25			
15						
16						
17						
18	Motorized adjustment of control unit swivelling (drive 24 V DC seat height + 30 mm)		8			
19	Heating 2 x 2 kW with ventilator 230 V 50 Hz airvolume ca. 300 m³/h mounted on the swivel base sidewise					
20	Multi-axis controller	look catalog 1/100				
21	Single-axis controller	look catalog 1/200				
22	Double-handle controller	look catalog 1/160				
23	Control-switch	look catalog 1/220				
24	Command and indicating devices	look catalog 1/360				
30	Terminal block 4 mm² without wiring each terminal				KL	
31	Terminal block 4 mm² with wiring wire 1,5 mm² each terminal				KL	
32	External wiring single wire highly flexible 1,5 mm² 5 metre long					
33	Additional or subtract price each metre					
40	Special painted					
41	Indicating labels not engraved with 2 or 4 arrows					
42	Engraved each 10 characters					



Type	Dimension A	Dimension B	Dimension C
KST 51	200	1000	580
KST 52	270	1140	640
KST 54	320	1240	690

View „X“





The swivelling crane control unit KST 6 is ergonomically designed and provides a high degree of comfort.

The standard design includes following:

Equipment boxes: plastic PU foam

The equipment boxes with the devices can be vertically and horizontally adjusted together with the armrests. Cabling is run through duct in the cross-member. (Terminal block).

Seat: Comfortable spring mounted seat KFS 9, with an oilhydraulic vibration absorption system, weight adjustment and air-permeable artificial leather or textil material.

Adjusting possibilities: Seat horizontally and vertically. Inclination of cushion, backrest and armrest also adjustable. Weight setting for optimum spring suspension.

Cross-member: Steel section, top of which can be raised to lay cabling. The seat can be tilted backwards so that the cable duct in the cross-member is accessible.

Swivel base: Zero-end-float spring-loaded bearing. Rotational movement 180° right, 90° left, stopped by friction brake.

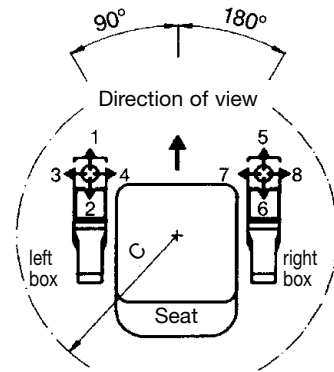
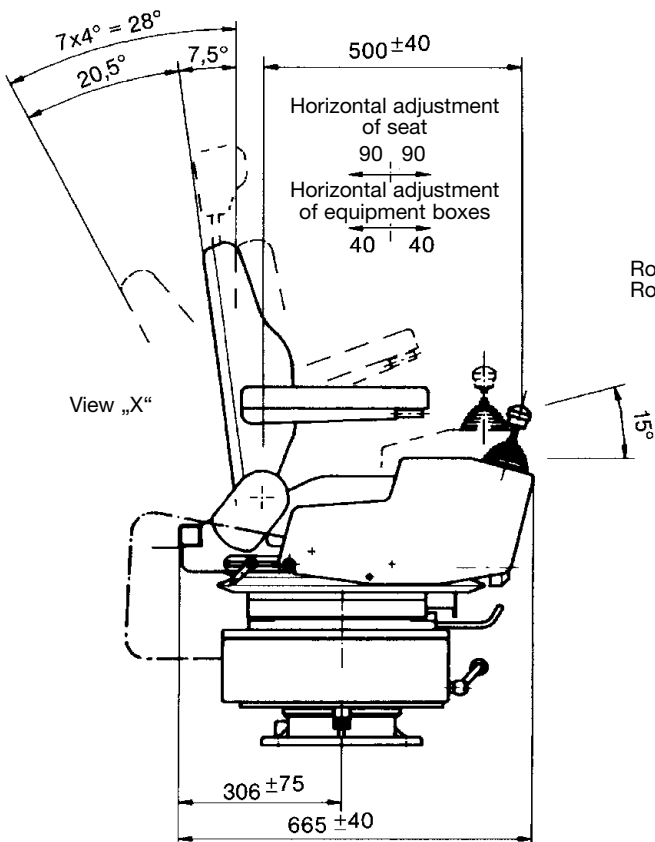
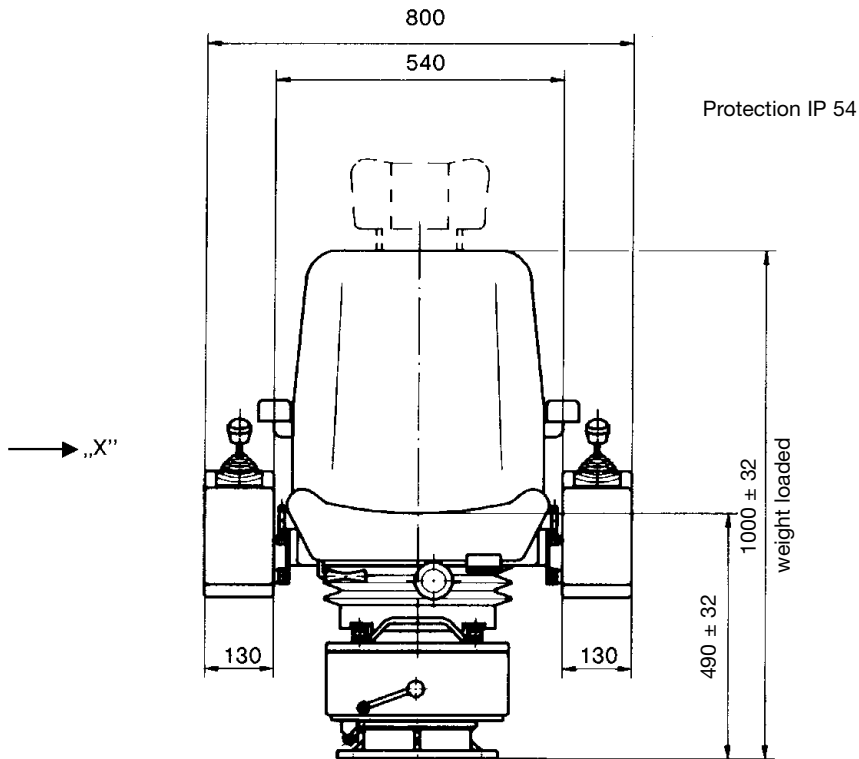
Surface treatment: Anti-corrosion primer, top coat: 2 coats of epoxy-resin paint, standard colour RAL 9011 black.

All non-painted metal parts are electrogalvanized and chromed.

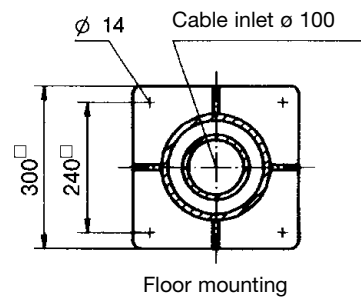
Description data look catalog 5/003/004

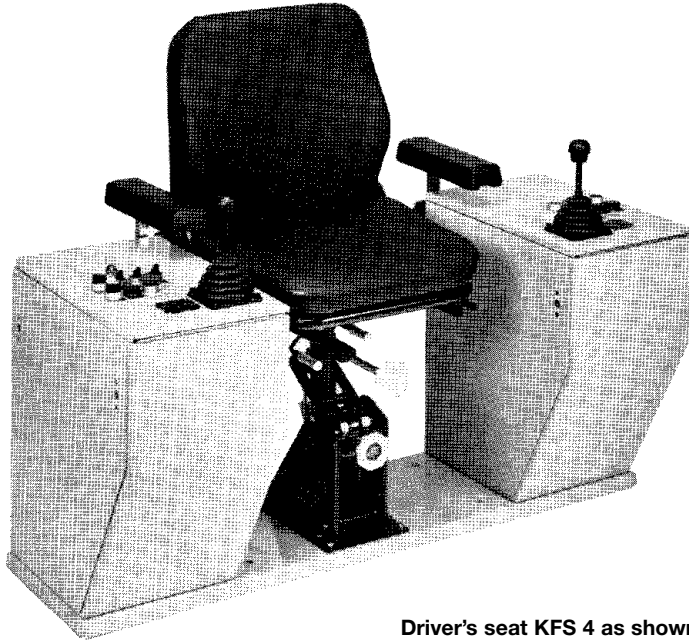
Permissible ambient temperature	Operation -40° C to +60° C
	Storage -50° C to +80° C
Climate resistance	
Damp heat constant	DIN IEC 68 part 2-3
Damp heat cyclic	DIN IEC 68 part 2-30
Degree of protection	IP 54 IEC 529 DIN 40050

Pos.		Weight kg	Part No.	Type	Price EURO
1	Crane control unit standard design	48		KST 6	
2	Crane control unit standard design not swivelled	48		KST 61	
3	Crane control unit standard design without swivel base and cross-member	38		KST 62	
4					
5					
6	Headrest for driver's seat KFS 9				
7	additional variations for driver's seat KFS 9 look catalog 2/140				
8					
9					
10	Footrest mounted onto swivel base adjustable ± 15 mm	8			
11					
12					
13	Plate for horizontal manual adjustment of control unit adjustable ± 250 mm	95			
14					
15					
16					
17					
18					
19	Heating 2 x 2 kW with ventilator 230 V 50 Hz airvolume ca. 300 m³/h mounted on the swivel base sidewise				
20	Multi-axis controller look catalog 1/100				
21	Single-axis controller look catalog 1/200				
22	Double-handle controller look catalog 1/160				
23	Control-switch look catalog 1/220				
24	Command and indicating devices look catalog 1/360				
30	Terminal block 4 mm² without wiring each terminal			KL	
31	Terminal block 4 mm² with wiring wire 1,5 mm² each terminal			KL	
32	External wiring single wire highly flexible 1,5 mm² 5 metre long				
33	Additional or subtract price each metre				
40	Special painted				
41	Indicating labels not engraved with 2 or 4 arrows				
42	Engraved each 10 characters				



Rotation radius ,C' - bei minimal adjusting = 520 mm
Rotation radius ,C' - bei maximal adjusting = 620 mm





Driver's seat KFS 4 as shown

The crane control unit KST 7 combines in its design the crane driver's seat and the control and monitoring devices. Ready wired, it can be easily and quickly installed in the crane cabin.

Equipment boxes: Sheet steel.

The equipment boxes with the devices fitted have hinged tops that can be locked in position. They contain the termination and connection facilities and a lockable plug-in cover on the inside.

Seat KFS 2: The seat backrest can be tipped forwards and further tipped together with the cushion.

The cushion and seat backrest are padded.

Adjusting possibilities: Cushion horizontally and vertically.

Height adjustment via a gas-loaded spring in the seat base.

Seat backrest horizontally and vertically to the cushion.

Armrests padded and adjustable in height.

Fixed to the equipment boxes.

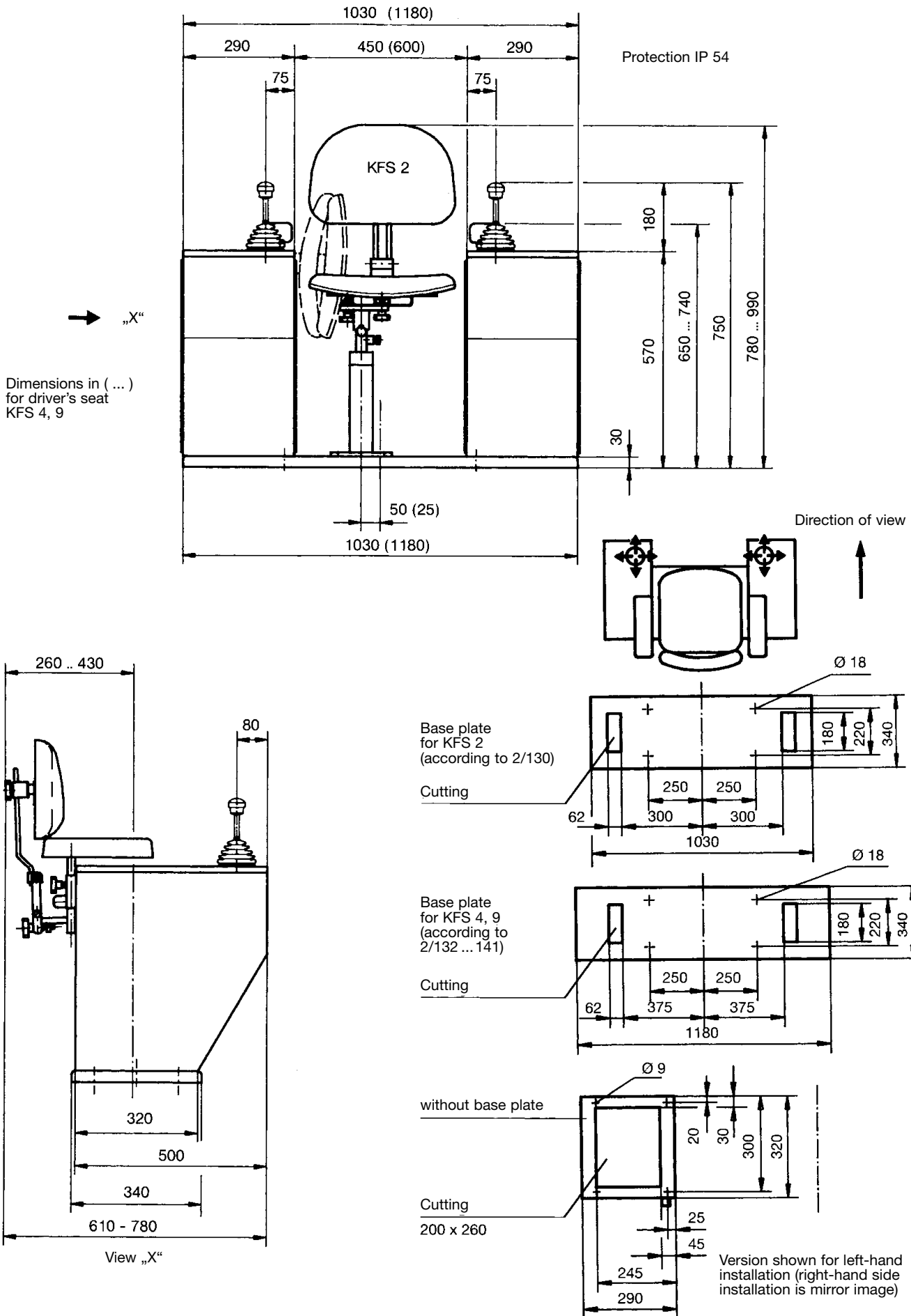
Surface treatment: Anti-corrosion primer, top coat: 2 coats of epoxy-resin paint, standard colour RAL 7032 pebble-grey.

All non-painted metal parts are electrogalvanized and chromed.

Description data look catalog 5/003/004

Permissible ambient temperature	Operation -40° C to +60° C
	Storage -50° C to +80° C
Climate resistance	
Damp heat constant	DIN IEC 68 part 2-3
Damp heat cyclic	DIN IEC 68 part 2-30
Degree of protection	IP 54 IEC 529 DIN 40050

Pos.				Weight kg	Part No.	Type	Price EURO
1	Crane control unit with driver's seat	KFS 2	with base plate	51		KST 7	
2	Crane control unit with driver's seat	KFS 2	without base plate	46		KST 71	
3	Crane control unit without driver's seat	KFS 2	with base plate	36		KST 72	
4	Crane control unit without driver's seat	KFS 2	without base plate	31		KST 73	
5							
10	Driver's seat	look catalog 2/130				KFS 2	
11							
12	Driver's seat	look catalog 2/132 (picture shows)				KFS 4	
13							
14							
15	Driver's seat	look catalog 2/140				KFS 9	
20	Multi-axis controller	look catalog 1/100					
21	Single-axis controller	look catalog 1/200					
22	Double-handle controller	look catalog 1/160					
23	Control-switch	look catalog 1/220					
24	Command and indicating devices	look catalog 1/360					
25							
30	Terminal block 4 mm ² without wiring each terminal					KL	
31	Terminal block 4 mm ² with wiring wire 1,5 mm ² each terminal					KL	
32	External wiring single wire highly flexible 1,5 mm ² x 5 metre long						
33	Additional or subtract price each metre						
34							
35							
40	Special painted						
41	Indicating labels not engraved with 2 or 4 arrows						
42	Engraved each 10 characters						
43							





Driver's seat KFS 2 as shown

The crane control unit KST 75 combines in its design the crane driver's seat and the control and monitoring devices. Ready wired, it can be easily and quickly installed in the crane cabin.

Equipment boxes: Sheet steel.

The equipment boxes with the devices fitted have hinged tops that can be locked in position. They contain the termination and connection facilities and a lockable plug-in cover on the inside.

Seat KFS 2: The seat backrest can be tipped forwards and further tipped together with the cushion. The cushion and seat backrest are padded.

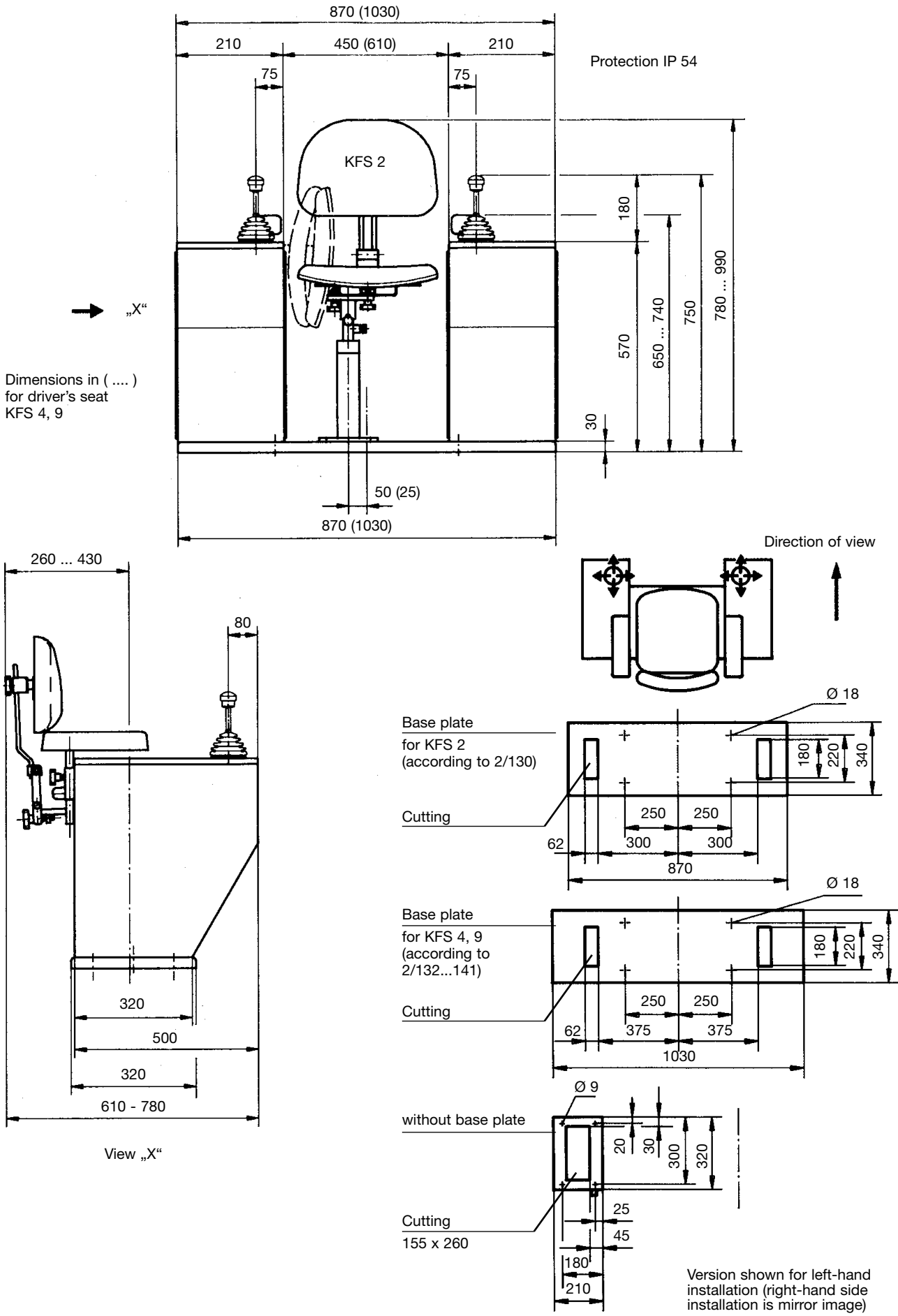
Adjusting possibilities: Cushion horizontally and vertically. Height adjustment via a gas-loaded spring in the seat base. Seat backrest horizontally and vertically to the cushion. Armrests padded and adjustable in height. Fixed to the equipment boxes.

Surface treatment: Anti-corrosion primer, top coat: 2 coats of epoxy-resin paint, standard colour RAL 7032 pebble-grey. All non-painted metal parts are electrogalvanized and chromed.

Description data look catalog 5/003/004

Permissible ambient temperature	Operation -40° C to +60° C
	Storage -50° C to +80° C
Climate resistance	
Damp heat constant	DIN IEC 68 part 2-3
Damp heat cyclic	DIN IEC 68 part 2-30
Degree of protection	IP 54 IEC 529 DIN 40050

Pos.				Weight kg	Part No.	Type	Price EURO
1	Crane control unit with driver's seat	KFS 2	with base plate	51		KST 75	
2	Crane control unit with driver's seat	KFS 2	without base plate	46		KST 76	
3	Crane control unit without driver's seat	KFS 2	with base plate	36		KST 77	
4	Crane control unit without driver's seat	KFS 2	without base plate	31		KST 78	
5							
10	Driver's seat	look catalog 2/130 (picture shows)				KFS 2	
11							
12	Driver's seat	look catalog 2/132				KFS 4	
13							
14							
15	Driver's seat	look catalog 2/140				KFS 9	
20	Multi-axis controller	look catalog 1/100					
21	Single-axis controller	look catalog 1/200					
22	Double-handle	look catalog 1/160					
23	Control-switch	look catalog 1/220					
24	Command and indicating devices	look catalog 1/360					
25							
30	Terminal block 4 mm ² without wiring each terminal					KL	
31	Terminal block 4 mm ² with wiring wire 1,5 mm ² each terminal					KL	
32	External wiring single wire highly flexible 1,5 mm ² x 5 metre long						
33	Additional or subtract price each metre						
34							
35							
40	Special painted						
41	Indicating labels not engraved with 2 or 4 arrows						
42	Engraved each 10 characters						
43							





The swivelling crane control unit KST 8 is ergonomically designed and provides a high degree of comfort.

The standard design includes following:

Equipment boxes: plastic PU foam

The equipment boxes with the devices can be vertically and horizontally adjusted together with the armrests. Cabling is run through duct in the cross-member. (Terminal block).

Seat: Comfortable spring mounted seat KFS 9, with an oilhydraulic vibration absorption system, weight adjustment and air-permeable artificial leather or textil material.

Adjusting possibilities: Seat horizontally and vertically. Inclination of cushion, backrest and armrest also adjustable. Weight setting for optimum spring suspension. Right equipment box turnable.

Cross-member: Steel section, top of which can be raised to lay cabling. The seat can be tilted backwards so that the cable duct in the cross-member is accessible.

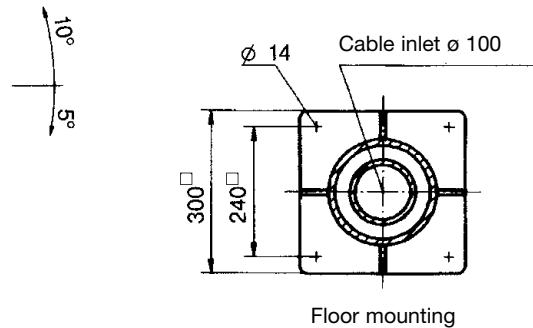
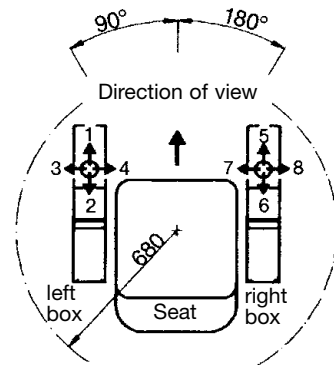
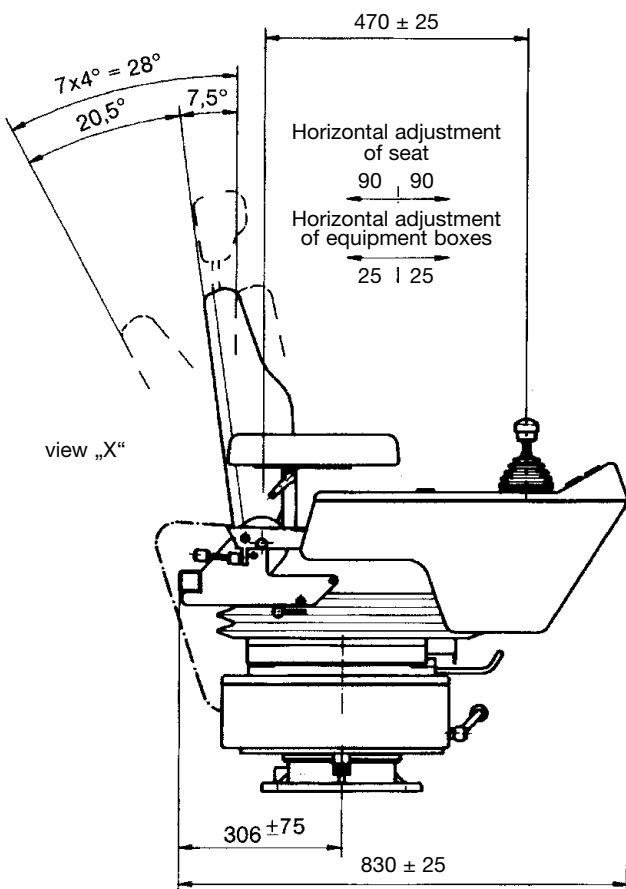
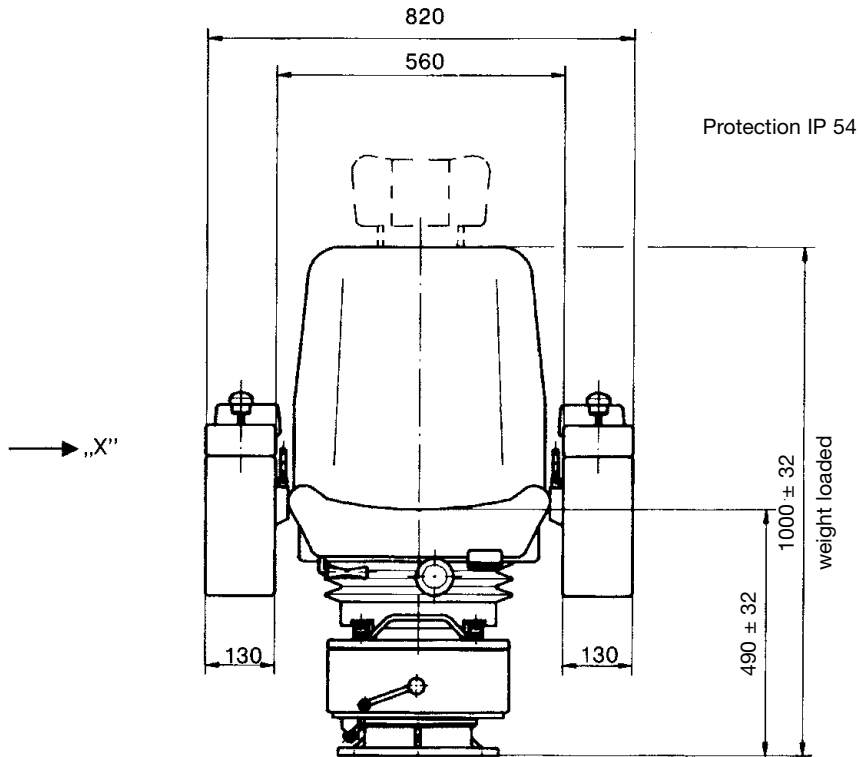
Swivel base: Zero-end-float spring-loaded bearing. Rotational movement 180° right, 90° left, stopped by friction brake.

Surface treatment: Anti-corrosion primer, top coat: 2 coats of epoxy-resin paint, standard colour RAL 9011 black. All non-painted metal parts are electrogalvanized and chromed.

Permissible ambient temperature	Operation -40° C to +60° C
	Storage -50° C to +80° C
Climate resistance	
Damp heat constant	DIN IEC 68 part 2-3
Damp heat cyclic	DIN IEC 68 part 2-30
Degree of protection	IP 54 IEC 529 DIN 40050

Description data look catalog 5/005

Pos.		Weight kg	Part No.	Type	Price EURO
1	Crane control unit standard design	48		KST 8	
2	Crane control unit standard design not swivelled	48		KST 81	
3	Crane control unit standard design without swivel base and cross-member	38		KST 82	
4					
5					
6	Headrest for driver's seat KFS 9				
7	additional variations for driver's seat KFS 9 look catalog 2/140				
8					
9					
10	Footrest mounted onto swivel base adjustable ± 15 mm	8			
11					
12					
13	Plate for horizontal manual adjustment of control unit adjustable ± 250 mm	95			
14					
15					
16					
17					
18					
19	Heating 2 x 2 kW with ventilator 230 V 50 Hz airvolume ca. 300 m³/h mounted on the swivel base sidewise				
20	Multi-axis controller look catalog 1/100				
21	Single-axis controller look catalog 1/200				
22	Double-handle controller look catalog 1/160				
23	Control-switch look catalog 1/220				
24	Command and indicating devices look catalog 1/360				
30	Terminal block 4 mm² without wiring each terminal			KL	
31	Terminal block 4 mm² with wiring wire 1,5 mm² each terminal			KL	
32	External wiring single wire highly flexible 1,5 mm² 5 metre long				
33	Additional or subtract price each metre				
40	Special painted				
41	Indicating labels not engraved with 2 or 4 arrows				
42	Engraved each 10 characters				





The crane control unit KST 85 is ergonomically designed and provides a high degree of comfort.

The standard design includes following.

Equipment boxes: plastic PU foam

The equipment boxes with the devices can be vertically and horizontally adjusted together with the armrest. Cabling is run through aduct on the terminal block. (The terminal block housing is mounting behind the seat)

Seat: Comfortable static mounted seat KFS 8, covered with air-permeable artificial leather or with textil material and with roller-bearing swivel system.

Adjusting possibilities: Seat horizontally and vertically. Inclination of cushion, backrest and armrest also adjustable. Seat with the equipment boxes swivelled 90° one sided. Endpoints to look. Right equipment box turnable.

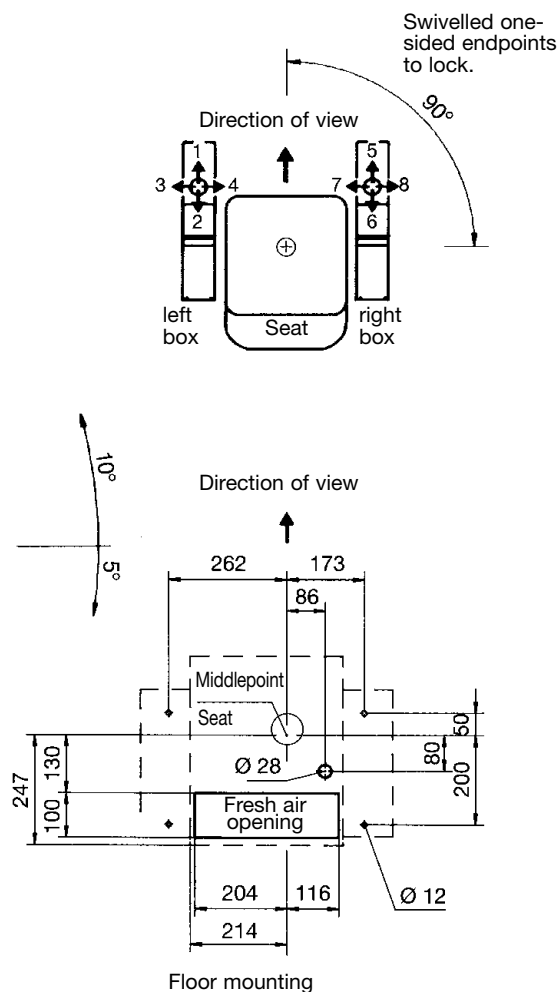
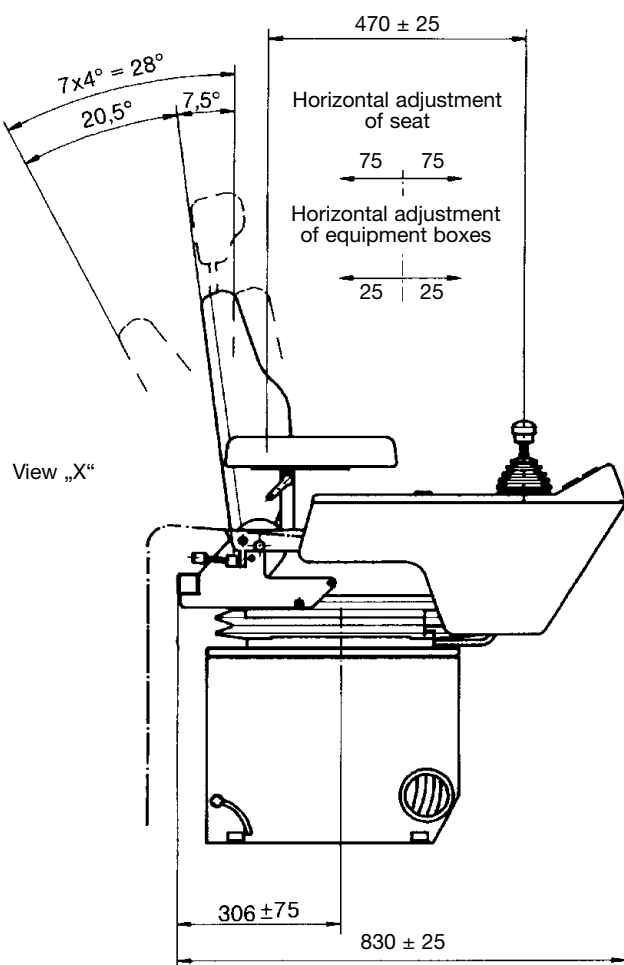
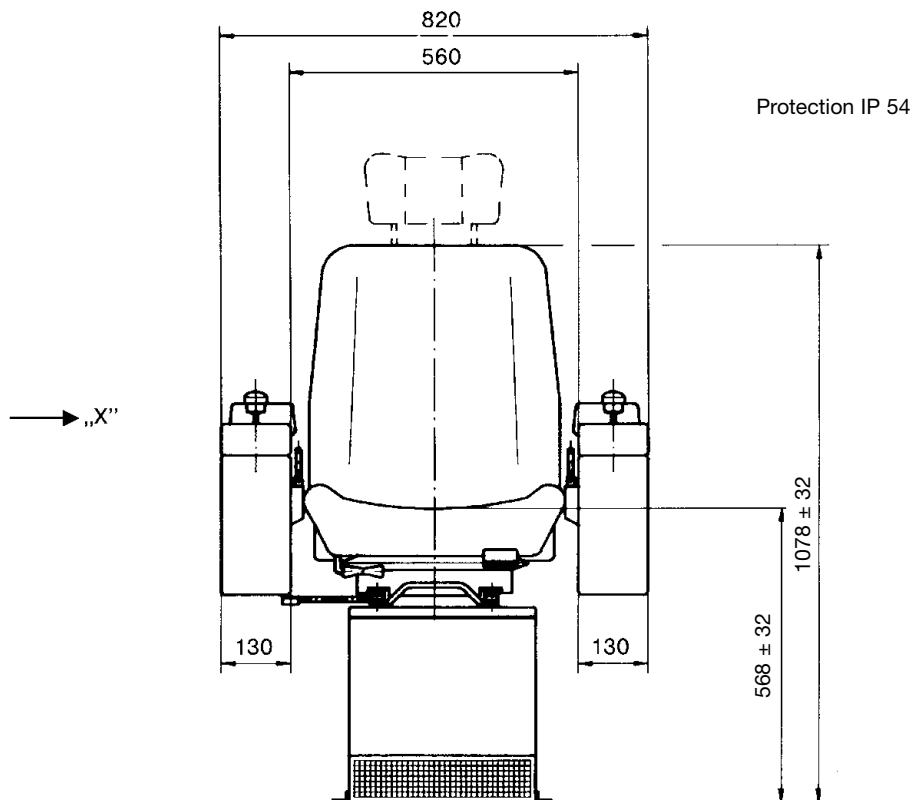
Console: Heating 2 steps 2 x 2 kW 380 V AC
Ventilator 380 V AC air volume ca 1000 m³/h air circulation (opening in the rear side of the console) fresh air circulation (opening in the underside of the console). Selector switch for heating/ventilator are in the box. The seat can be tilted forward to reach the terminal block of the heating / ventilator.

Surface treatment: Anti-corrosion primer, top coat: 2 coats of epoxy-resin paint, standard colour RAL 9011 black. All non-painted metal parts are electrogalvanized and chromed.

Permissible ambient temperature	Operation -40° C to +60° C
	Storage -50° C to +80° C
Climate resistance	
Damp heat constant	DIN IEC 68 part 2-3
Damp heat cyclic	DIN IEC 68 part 2-30
Degree of protection	IP 54 IEC 529 DIN 40050

Description data look catalog 5/005

Pos.		Weight kg	Part No.	Type	Price EURO
1	Crane control unit standard design with heating/ventilator	48		KST 85	
2					
3	Crane control unit standard design without heating/ventilator	45		KST 87	
4					
5					
6	Headrest for driver's seat KFS 8				
7	additional variations of driver's seat KFS 8 look catalog 2/138				
8					
9					
10	Footrest mounted onto console adjustable ± 15 mm	8			
11					
12					
13					
14					
15					
16					
17					
18					
19					
20	Multi-axis controller	look catalog 1/100			
21	Single-axis controller	look catalog 1/200			
22	Double-handle controller	look catalog 1/160			
23	Control-switch	look catalog 1/220			
24	Command and indicating devices	look catalog 1/360			
30	Terminal block 4 mm ² without wiring each terminal			KL	
31	Terminal block 4 mm ² with wiring wire 1,5 mm ² each terminal			KL	
32	External wiring single wire highly flexible 1,5 mm ² 5 metre long				
33	Additional or subtract price each metre				
40	Special painted				
41	Indicating labels not engraved with 2 or 4 arrows				
42	Engraved each 10 characters				





The swivelling crane control unit KST 9 is ergonomically designed and provides a high degree of comfort.

The standard design includes following:

Equipment boxes: Top panel made of plastic PU foam, bottom made of sheet steel. The top panel box with the devices can be raised and locked in front position. The terminal strip is easily accessible via an opening on the outside of the bottom, that can be closed with a lockable cover. The front edge of the top panel is angled and is therefore visually better for the crane driver. This surface is for important current alarm, indicators, operation indicator and instruments. The recessed built-in armrests are in the height adjustment.

Seat: Comfortable spring mounted seat KFS 9, with an oilhydraulic vibration absorption system, weight adjustment and air-permeable artificial leather or textil material.

Adjusting possibilities: Seat horizontally and vertically. Inclination of cushion, backrest and armrest also adjustable. Weight setting for optimum spring suspension.

Cross-member: Steel section, top of which can be raised to lay cabling. The seat can be tilted backwards so that the cable duct in the cross-member is accessible.

Swivel base: Zero-end-float spring-loaded bearing. Rotational movement 180° right, 90° left, stopped by friction brake.

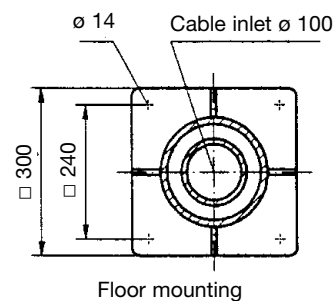
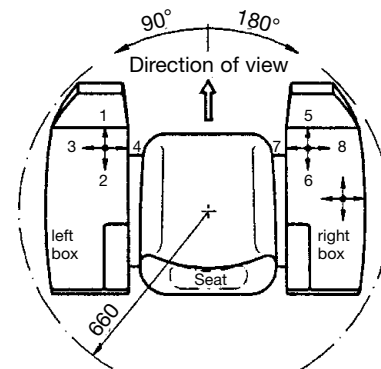
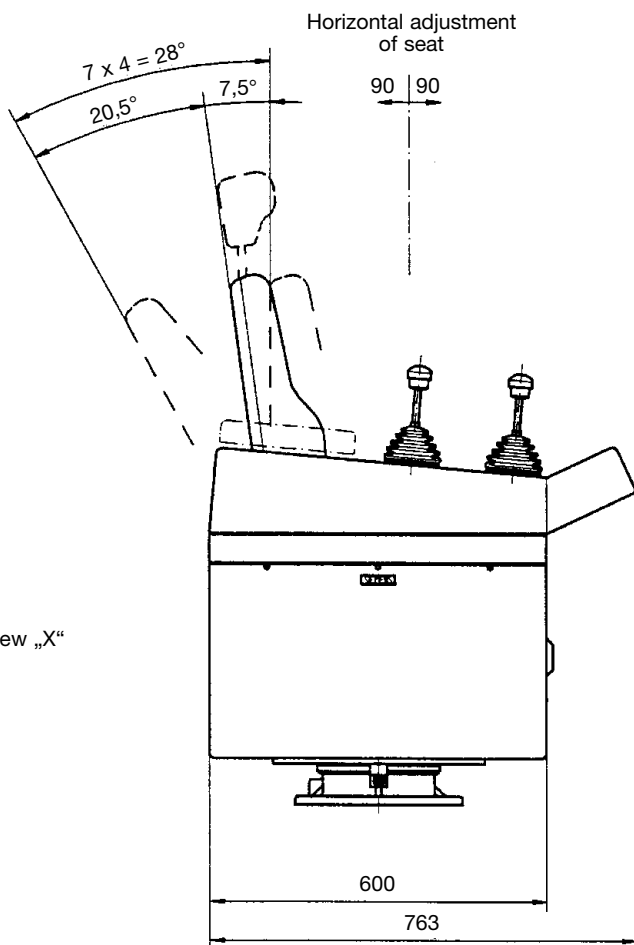
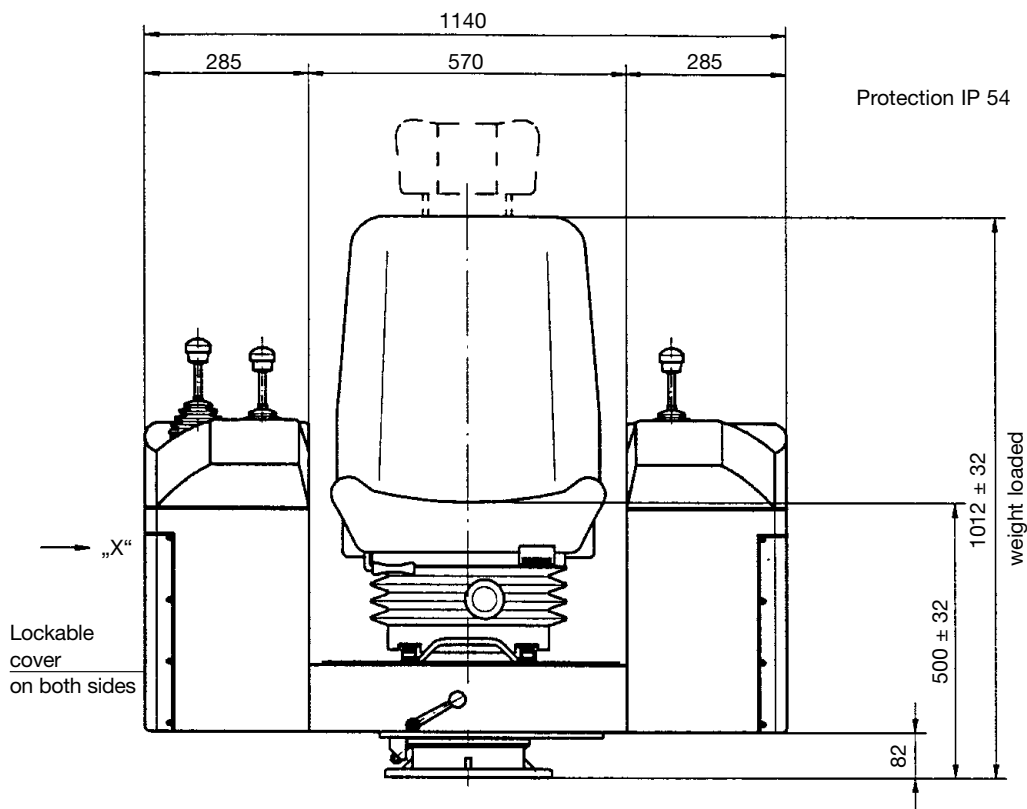
Surface treatment: Anti-corrosion primer, top coat: 2 coats of epoxy-resin paint, standard colour RAL 9011 black. All non-painted metal parts are electrogalvanized and chromed.

Permissible ambient temperature Operation -40° C to +60° C
Storage -50° C to +80° C

Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection IP 54 IEC 529 DIN 40050

Description data look catalog 5/006/007

Pos.			Weight kg	Part No.	Type	Price EURO
1	Crane control unit standard design		90		KST 9	
2						
3						
4						
5						
6	Headrest for driver's seat KFS 9					
7	additional variations for driver's seat KFS 9 look catalog 2/140					
8	Driver's seat KFS 10 look catalog 2/142				KFS 10	
9	Monitor mounting support left or right T 478		10			
10	Footrest mounted onto swivel base adjustable ± 15 mm		8			
11						
12						
13	Plate for horizontal manual adjustment of control unit adjustable ± 250 mm		95			
14	Manual adjustment of control unit vertical (gas loaded spring) adjustable 80 mm		25			
15						
16						
17						
18	Motorized adjustment of control unit swivelling (drive 24 V DC, seat height + 30 mm)		8			
19						
20	Multi-axis controller look catalog 1/100					
21	Single-axis controller look catalog 1/200					
22	Double-handle controller look catalog 1/160					
23	Control-switch look catalog 1/220					
24	Command and indicating devices look catalog 1/360					
30	Terminal block 4 mm ² without wiring each terminal				KL	
31	Terminal block 4 mm ² with wiring wire 1,5 mm ² each terminal				KL	
32	External wiring single wire highly flexible 1,5 mm ² 5 metre long					
33	Additional or subtract price each metre					
40	Special painted					
41	Indicating labels not engraved with 2 or 4 arrows					
42	Engraved each 10 characters					





The swivelling crane control unit KST 15 is ergonomically designed and provides a high degree of comfort.

The standard design includes following:

Equipment boxes: Sheet steel. The top panel of the equipment box with the devices can be raised and locked in position. The terminal strip is easily accessible via an opening on the inside that can be closed with a lockable cover. The external wiring is run through duct from the equipment boxes in the cross-member.

Seat: Comfortable spring mounted seat KFS 10, with a pneumatic vibration absorption system by compressor 24 V DC, weight adjustment and airpermeable artificial leather or textil material.

Manual adjustments: Seat horizontally and vertically. Inclination of cushion, backrest and armrest also adjustable. Weight setting for optimum spring suspension.

Motorized adjustments: Seat with equipment boxes vertical (inclinations adjustments forward/backward). Seat with equipment boxes horizontal. Selector switches for motorized-drives are in the equipment box. Motor 24 V DC ca. 15 ampere.

Cross-member: Steel section, top of which can be raised to lay cabling. The seat with the boxes can be tilted forwards so that the cable duct in the cross-member is accessible.

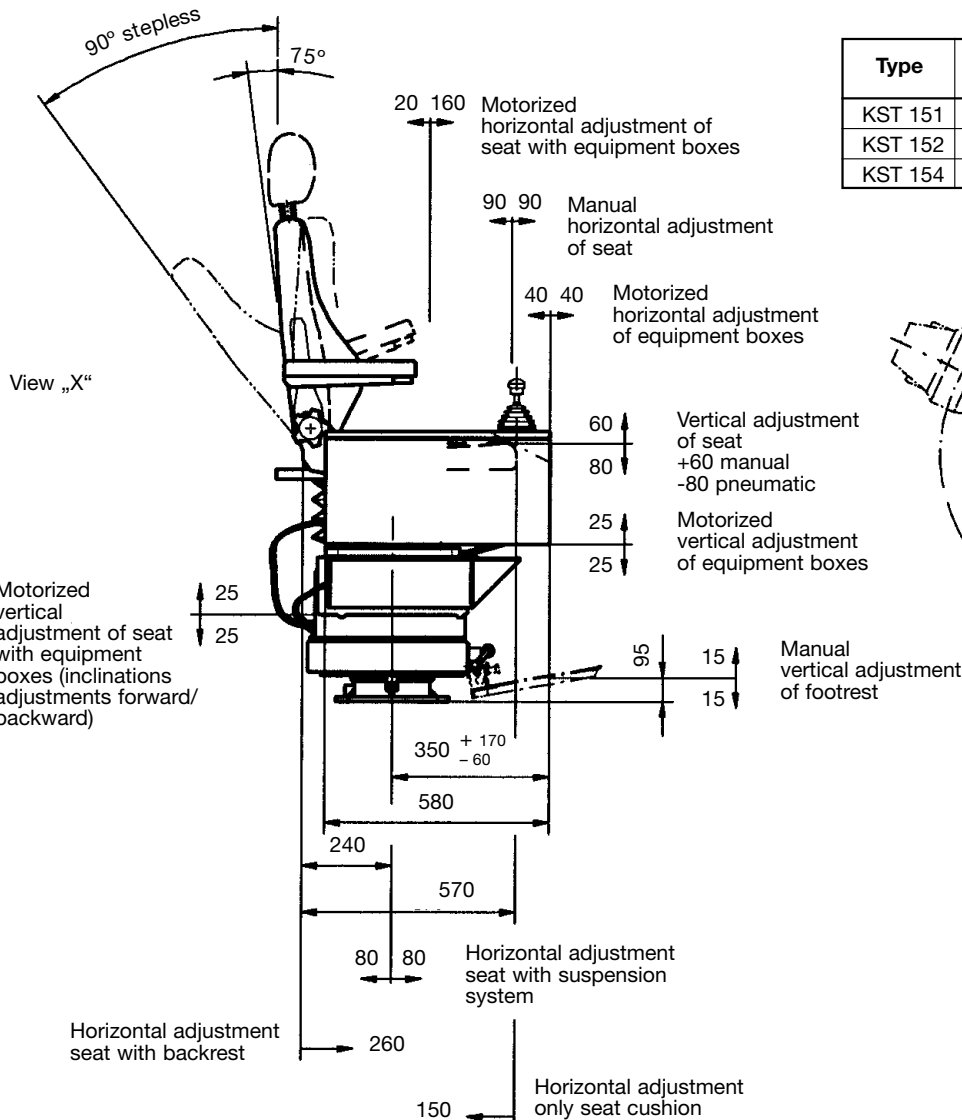
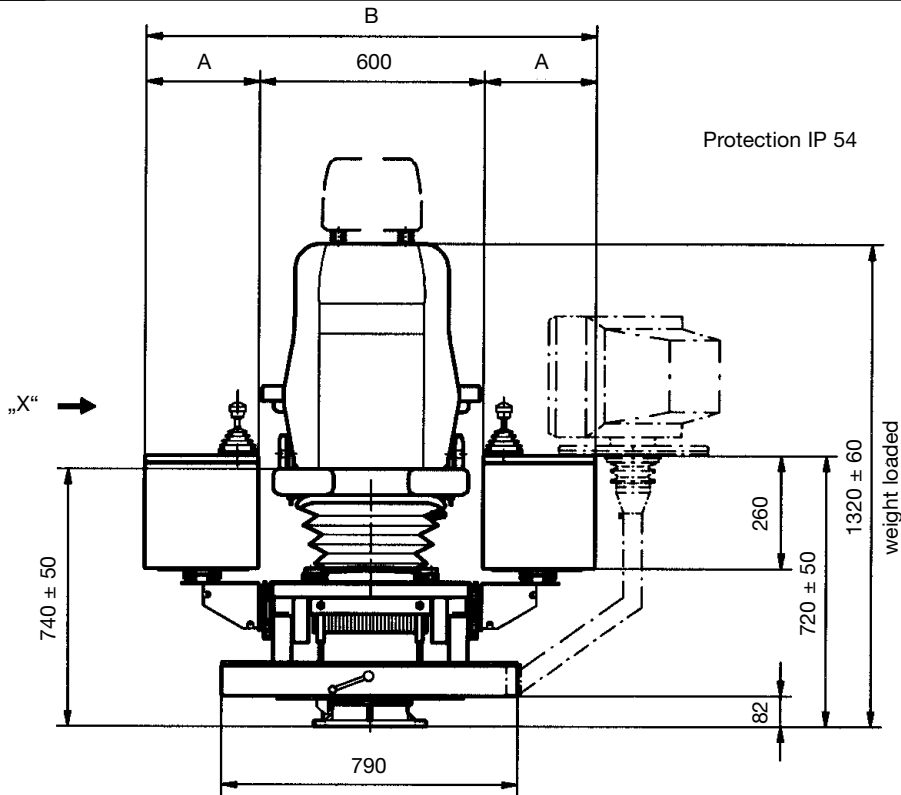
Swivel base: Zero-end-float spring-loaded bearing. Rotational movement 180° right, 90° left, stopped by friction brake.

Surface treatment: Anti-corrosion primer, top coat: 2 coats of epoxy-resin paint, standard colour RAL 7032 pebble-grey. All non-painted metal parts are electrogalvanized and chromed.

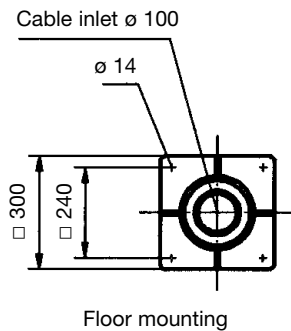
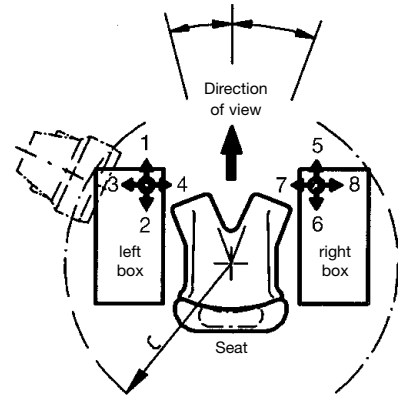
Description data look catalog 5/003/004

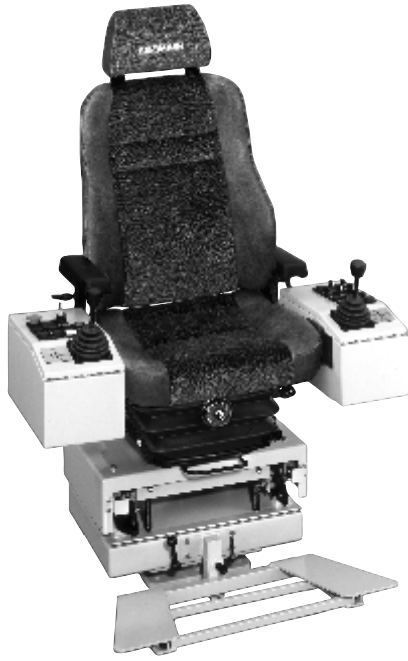
Permissible ambient temperature	Operation -40° C to +60° C Storage -50° C to +80° C
Climate resistance	
Damp heat constant	DIN IEC 68 part 2-3
Damp heat cyclic	DIN IEC 68 part 2-30
Degree of protection	IP 54 IEC 529 DIN 40050

Pos.			Weight kg	Part No.	Type	Price EURO
1	Crane control unit standard design	Equipment boxes 200 x 580 mm	236		KST 151	
2	Crane control unit standard design	Equipment boxes 270 x 580 mm	240		KST 152	
3						
4	Crane control unit standard design	Equipment boxes 320 x 580 mm	244		KST 154	
5	Crane control unit standard design	Equipment boxes special dimensions			KST 15x	
6	Headrest for driver's seat KFS 10					
7	additional variations for driver's seat KFS 10	look catalog 2/142				
8	Driver's seat KFS 9	look catalog 2/140			KFS 9	
9	Monitor mounting support left or right		10			
10	Footrest mounted onto swivel base adjustable ± 15 mm		8			
11						
12						
13	Plate for horizontal manual adjustment of control unit adjustable ± 250 mm		95			
14						
15	Motorized adjustment of equipment boxes vertical adjustable ± 25 mm 24 V DC					
16	Motorized adjustment of equipment boxes horizontal adjustable ± 40 mm 24 V DC					
17						
18	Motorized adjustment of control unit swivelling (drive 24 V DC, seat height + 30 mm)		18			
19	Heating 2 x 2 kW with ventilator 230 V 50 Hz airvolume ca. 300 m³/h mounted on the swivel base sidewise					
20	Multi-axis controller	look catalog 1/100				
21	Single-axis controller	look catalog 1/200				
22	Double-handle controller	look catalog 1/160				
23	Control-switch	look catalog 1/220				
24	Command and indicating devices	look catalog 1/360				
30	Terminal block 4 mm² without wiring each terminal				KL	
31	Terminal block 4 mm² with wiring wire 1,5 mm² each terminal				KL	
32	External wiring single wire highly flexible 1,5 mm² 5 metre long					
33	Additional or subtract price each metre					
40	Special painted					
41	Indicating labels not engraved with 2 or 4 arrows					
42	Engraved each 10 characters					



Type	Dimension A	Dimension B	Dimension C
KST 151	200	1000	800
KST 152	270	1140	845
KST 154	320	1240	880





The swivelling crane control unit KST 18 is ergonomically designed and provides a high grade of comfort.

The standard design includes following:

Equipment boxes: Sheet steel. The top panel of the equipment box with the devices can be raised and locked in position. Cabling is run through aduct from the equipment boxes in the cross-member. (Terminal block).

Seat: Comfortable spring mounted seat KFS 9, with an oilhydraulic vibration absorption system, weight adjustment and airpermeable artificial leather or textil material.

Manual adjustments: Seat horizontally and vertically. Inclination of cushion, backrest and armrest also adjustable. Weight setting for optimum spring suspension. Equipment boxes horizontally and vertically.

Motorized adjustments: Seat with equipment boxes vertical (inclinations adjustments forward/backward). Seat with equipment boxes horizontal. Selector switches for motorized-drives are in the equipment box. Motor 24 V DC ca. 15 ampere.

Cross-member: Steel section, top of which can be raised to lay cabling. The seat with the boxes can be tilted forwards so that the cable duct in the cross-member is accessible.

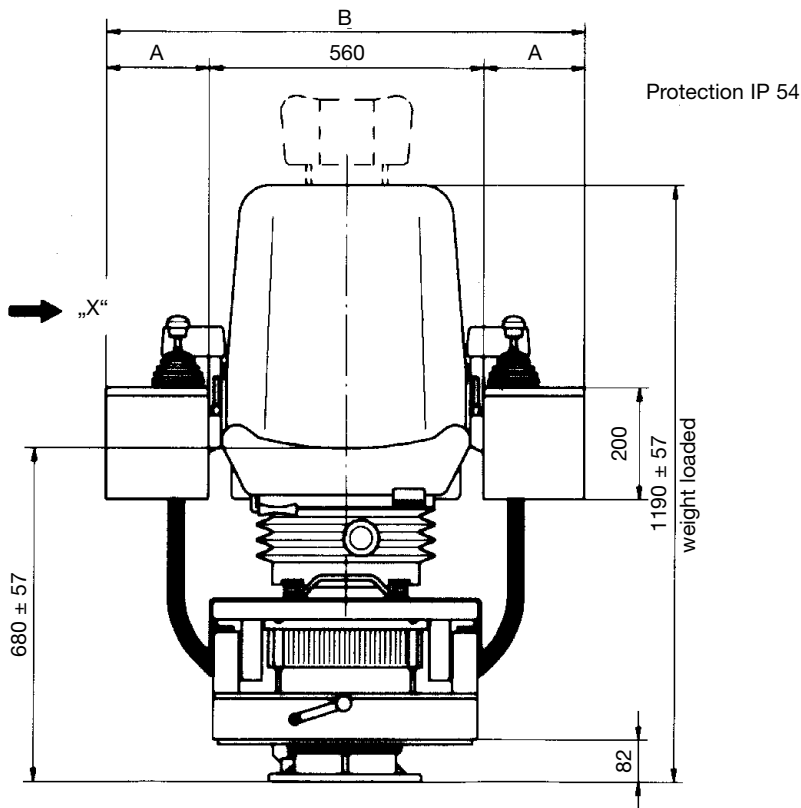
Swivel base: Zero-end-float spring-loaded bearing. Rotational movement 180° right, 90° left, stopped by friction brake.

Surface treatment: Anti-corrosion primer, top coat: 2 coats of epoxy-resin paint, standard colour RAL 7032 pebble-grey. All non-painted metal parts are electrogalvanized and chromed.

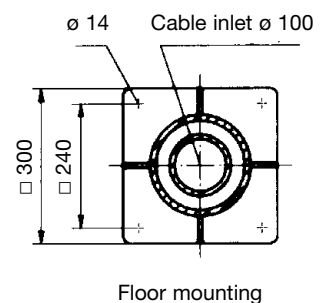
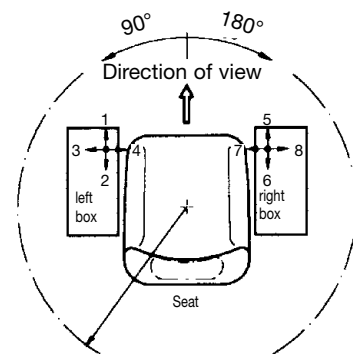
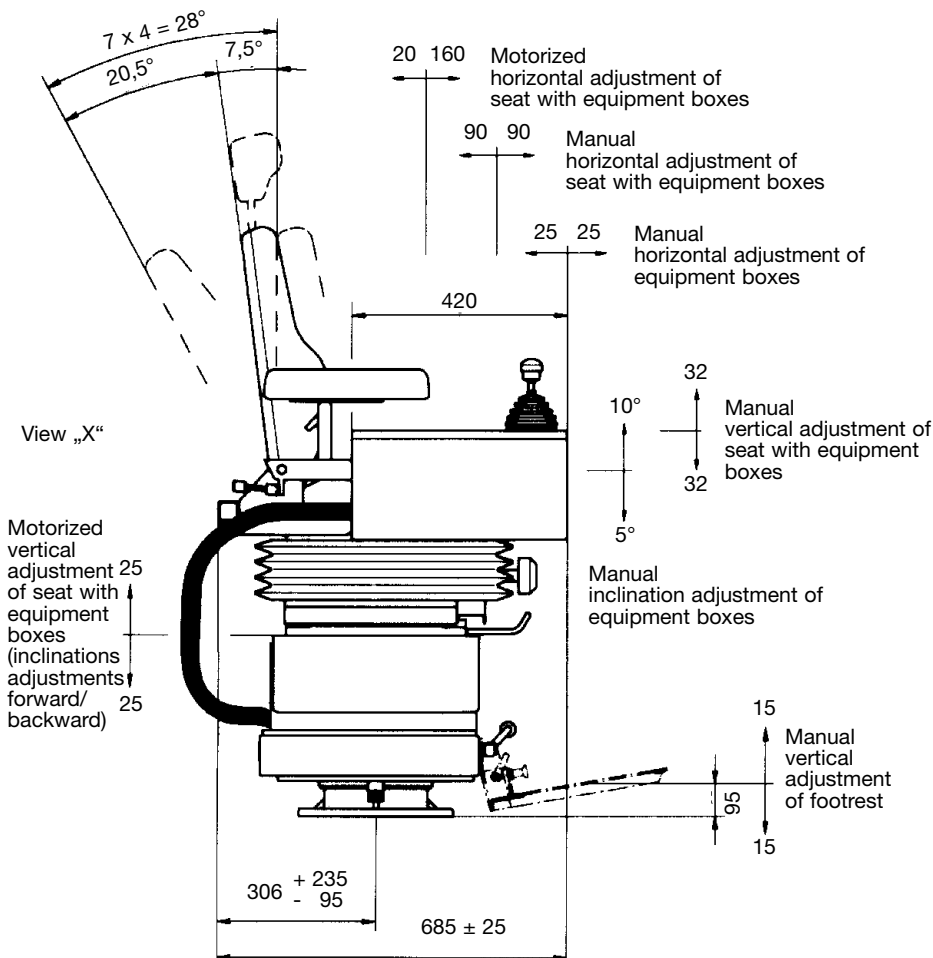
Description data look catalog 5/003/004

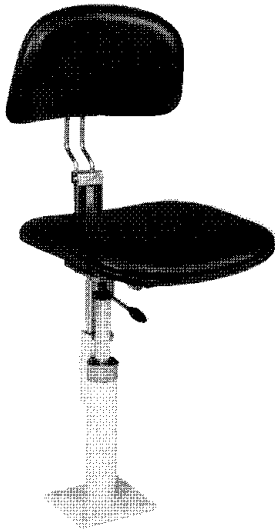
Permissible ambient temperature	Operation -40° C to +60° C Storage -50° C to +80° C
Climate resistance	
Damp heat constant	DIN IEC 68 part 2-3
Damp heat cyclic	DIN IEC 68 part 2-30
Degree of protection	IP 54 IEC 529 DIN 40050

Pos.			Weight kg	Part No.	Type	Price EURO
1	Crane control unit standard design	Equipment boxes 160 x 420 mm	148		KST 181	
2	Crane control unit standard design	Equipment boxes 200 x 420 mm	150		KST 182	
3						
4						
5	Crane control unit standard design	Equipment boxes special dimensions			KST 18x	
6	Headrest for driver's seat KFS 9					
7	additional variations for driver's seat KFS 9	look catalog 2/140				
8						
9						
10	Footrest mounted onto swivel base adjustable ± 15 mm		8			
11						
12						
13	Plate for horizontal manual adjustment of control unit adjustable ± 250 mm		95			
14						
15						
16						
17						
18	Motorized adjustment of control unit swivelling (drive 24 V DC, seat height + 30 mm)		16			
19	Heating 2 x 2 kW with ventilator 230 V 50 Hz airvolume ca. 300 m³/h mounted on the swivel base sidewise					
20	Multi-axis controller	look catalog 1/100				
21	Single-axis controller	look catalog 1/200				
22	Double-handle controller	look catalog 1/160				
23	Control-switch	look catalog 1/220				
24	Command and indicating devices	look catalog 1/360				
30	Terminal block 4 mm² without wiring each terminal				KL	
31	Terminal block 4 mm² with wiring wire 1,5 mm² each terminal				KL	
32	External wiring single wire highly flexible 1,5 mm² 5 metre long					
33	Additional or subtract price each metre					
40	Special painted					
41	Indicating labels not engraved with 2 or 4 arrows					
42	Engraved each 10 characters					



Type	Dimension A	Dimension B	Dimension C
KST 181	160	880	780
KST 182	200	960	810





The crane driver's seat KFS 2 has stepless high adjustment by means of a gas-loaded spring.

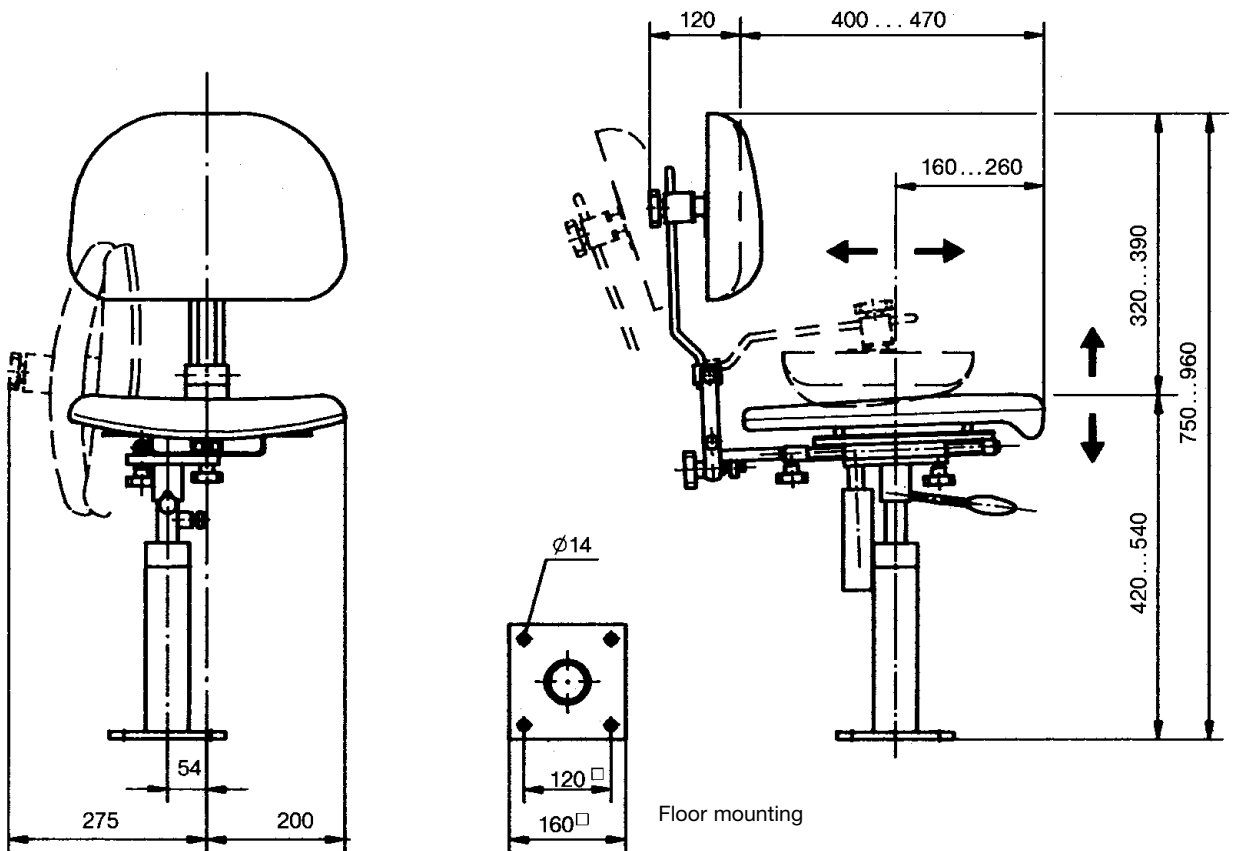
The backrest can be tilted, forwards onto the cushion, which in turn can then be tilted 90° sideways.

All these functions are performed easily via levers.

The metal parts are protected against corrosion and painted black.

Technical details:

Horizontal adjustment	100 mm
Backrest adjustment, fine control inclination backwards	max. 10°
Height adjustment	120 mm



Pos.		Weight kg	Part No.	Type	Price EURO
1	Driver's seat with air-permeable artificial leather cover black	15		KFS 21	
2	Driver's seat with textil cover grey / black	14		KFS 22	
3					
4					
5					
6					
7					
8					
9					
10					



The crane driver's seat KFS 4 has stepless high adjustment by means of a gas-loaded spring and an oilhydraulic vibration absorption system with weight adjustment.

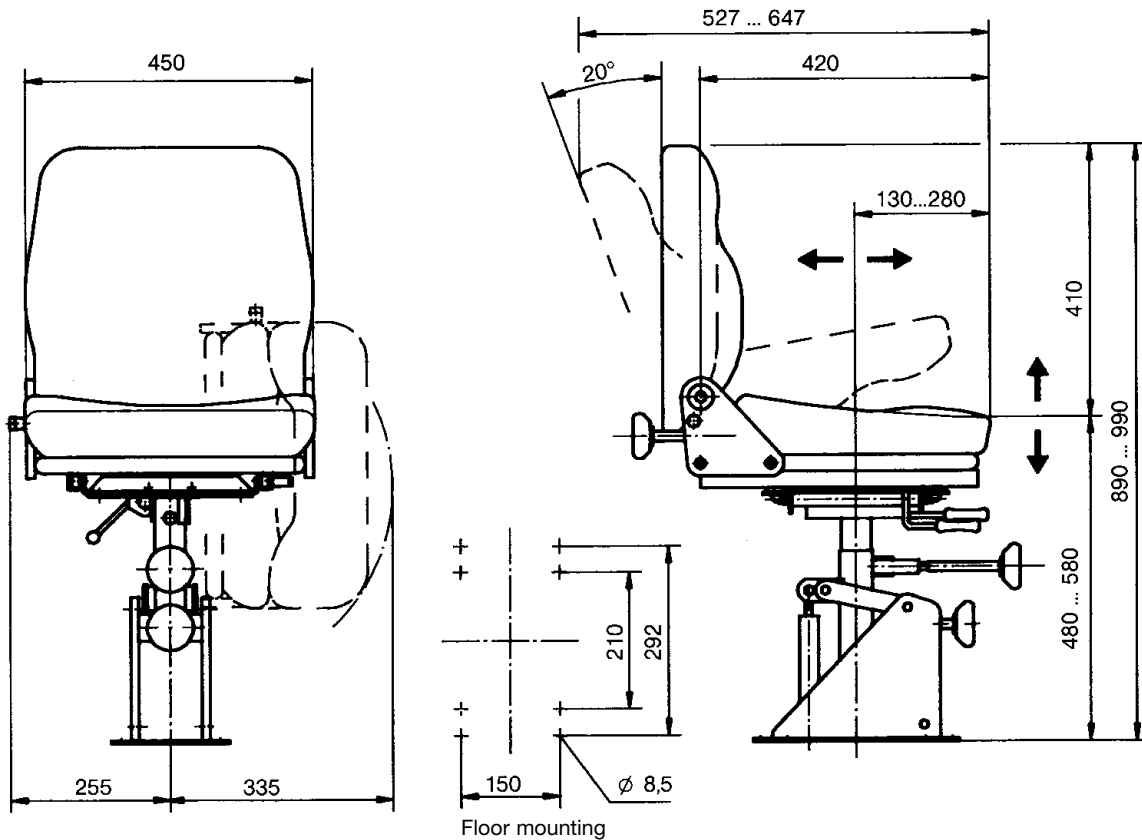
The backrest can be tilted, forwards onto the cushion, which in turn can then be tilted 90° sideways.

All these functions are performed easily via levers.

The metal parts are protected against corrosion and painted black.

Technical details:

Suspension stroke	80 mm
Weight adjustment	50-130 kg
Horizontal adjustment	150 mm
Backrest adjustment, fine control inclination backwards	max. 20°
Height adjustment	100 mm



Pos.		Weight kg	Part No.	Type	Price EURO
1	Driver's seat with air-permeable artificial leather cover black	24		KFS 41	
2	Driver's seat with textil cover grey / black	24		KFS 42	
3					
4	Armrest fully adjustable (2 pieces) 50 mm wide				
5	Armrest fully adjustable (2 pieces) 100 mm wide				
6					
7					
8					
9					
10					



The crane driver's seat KFS 6 is ergonomically designed and provides a high grade of comfort.

The driver's seat is a low level mechanical suspension seat with an oilhydraulic vibration absorption system with weight adjustment.

All adjustment controls are positioned ergonomically within easy access.

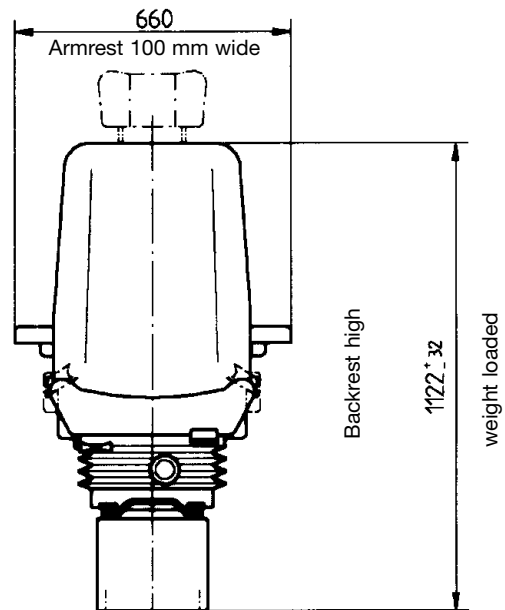
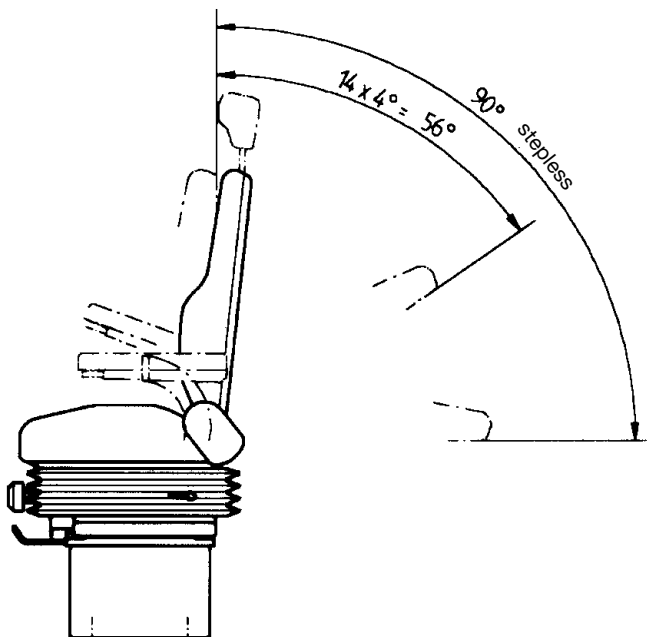
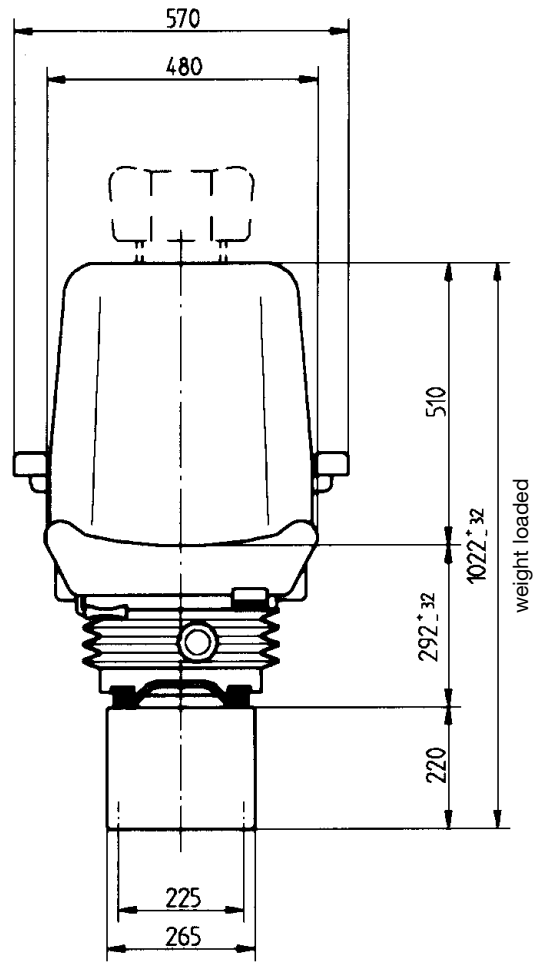
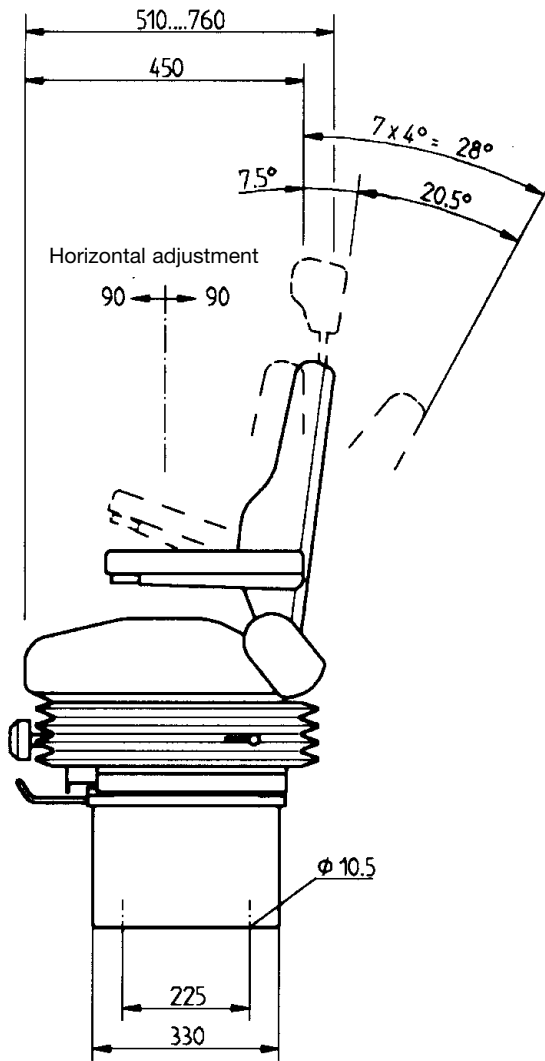
For this comfort driver's seat KFS 6 a lot of efficient accessories are available look Pos. 5-25.

The metal parts are protected against corrosion and painted black.

Technical detail:

Suspension stroke	95 mm
Weight adjustment	40-130 kg
Horizontal adjustment	180 mm
Backrest adjustment, fine control inclination backwards	28° (90°)
Height and slope adjustment	65 mm

Pos.		Weight kg	Part No.	Type	Price EURO
1	Driver's seat standard design with air-permeable artificial leather cover black	25		KFS 61	
2	Driver's seat standard design with textil cover grey / yellow	25		KFS 62	
3					
4					
5	Headrest raint				
6	Armrest fully adjustable (2 pieces) 50 mm wide				
7	Armrest fully adjustable (2 pieces) 100 mm wide				
8	Backrest high + 100 mm inclination backwards max. 90°				
9	Backrest standard with lumbar support manual adjustment				
10					
11	Seat cushion deep adjustment mechanical 60 mm				
12					
13	Seat contact 1 NO 1,5 A 24 V DC				
14	Seat cushion and backrest standard with heating element 24 V DC 42 Watt				
15					
16	Safety belt 2 point fixing				
17	Safety belt 4 point fixing (trouser braces belt)				
18					
19					
20					
21					
22					
23					
24	Console	10			
25					





The crane driver's seat KFS 7 is ergonomically designed and provides a high grade of comfort.

The driver's seat is a low level mechanical suspension seat with an oilhydraulic vibration absorption system with weight adjustment.

All adjustment controls are positioned ergonomically within easy access.

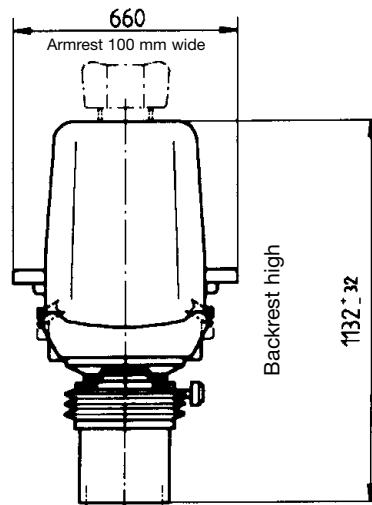
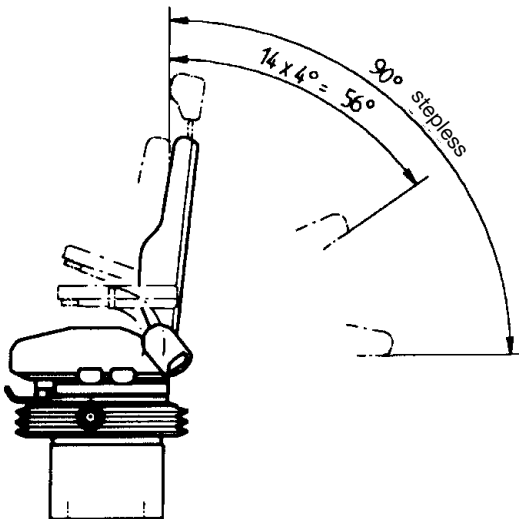
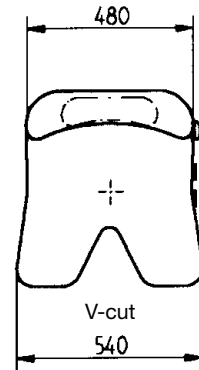
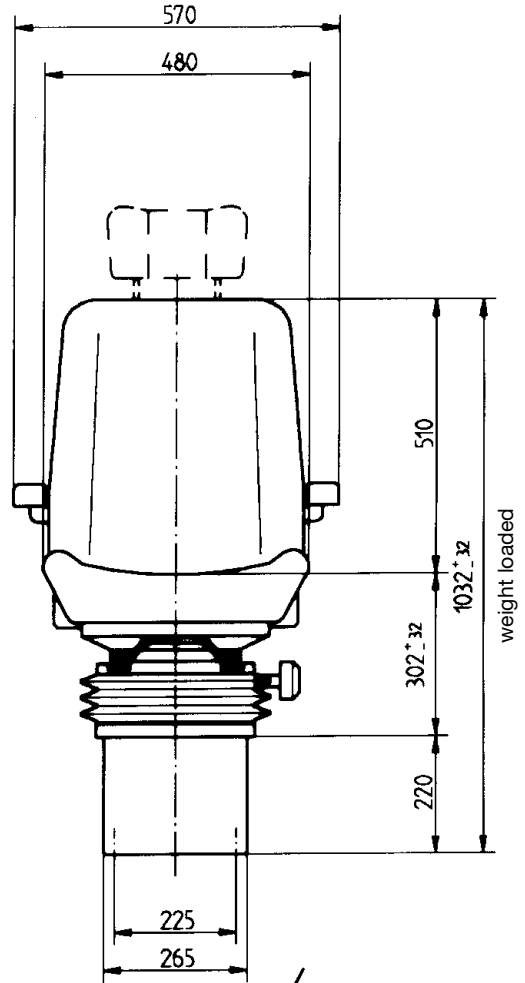
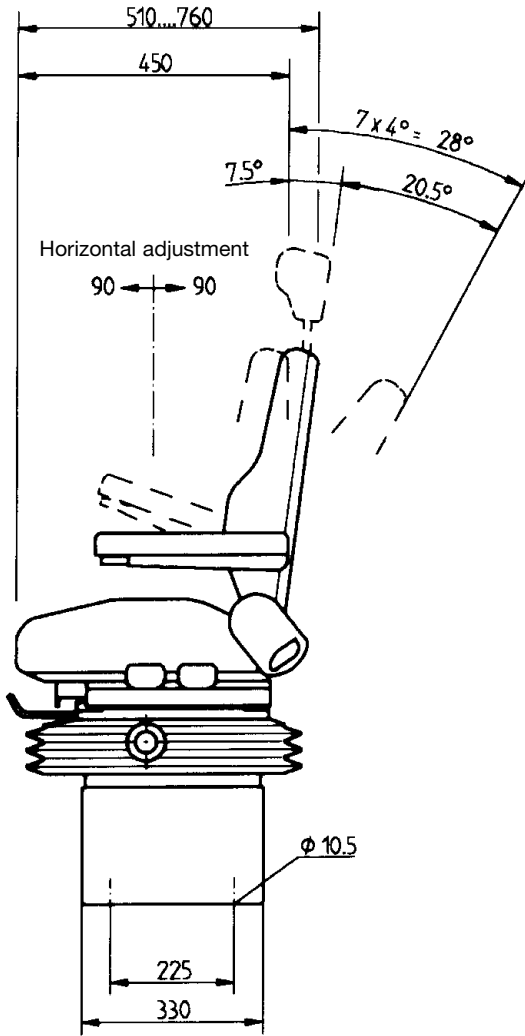
For this comfort driver's seat KFS 7 a lot of efficient accessories are available look Pos. 5-25.

The metal parts are protected against corrosion and painted black.

Technical detail:

Suspension stroke	60 mm
Weight adjustment	40-130 kg
Horizontal adjustment	180 mm, dual 300 mm
Backrest adjustment, fine control inclination backwards	28° (90°)
Height and slope adjustment	65 mm

Pos.		Weight kg	Part No.	Type	Price EURO
1	Driver's seat standard design with air-permeable artificial leather cover black	25		KFS 71	
2	Driver's seat standard design with textil cover grey / yellow	25		KFS 72	
3					
4					
5	Headrest raint				
6	Armrest fully adjustable (2 pieces) 50 mm wide				
7	Armrest fully adjustable (2 pieces) 100 mm wide				
8	Backrest high + 100 mm inclination backwards max. 90°				
9	Backrest standard with lumbar support manual adjustment				
10					
11	Seat cushion deep adjustment mechanical 60 mm				
12	Seat cushion V-cut (free sight to down)				
13	Seat contact 1 NO 1,5 A 24 V DC				
14	Seat cushion and backrest standard with heating element 24 V DC 42 Watt				
15					
16	Safety belt 2 point fixing				
17	Safety belt 4 point fixing (trouser braces belt)				
18					
19	Horizontal adjustment dual 180 + 120 mm (total 300 mm)				
20					
21					
22					
23					
24	Console	10			
25					





The crane driver's seat KFS 8 is a static seat with ergonomically designed and provides a high grade of comfort.

The driver's seat KFS 8 is equipped with roller-bearing swivel system.

All adjustment controls are positioned ergonomically within easy access.

For this comfort driver's seat KFS 8 a lot of efficient accessories are available look Pos. 5-25.

The console are available to build in the heating 2-steps 2 x 2 kW 380 V AC, ventilator 380 V AC, airvolume ca. 1000 m³/h, air circulation (opening in the underside of the console), selector switch for heating / ventilator.

The metal parts are protected against corrosion and painted black.

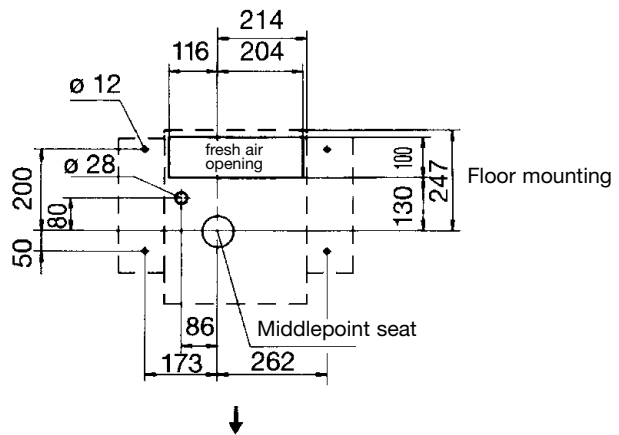
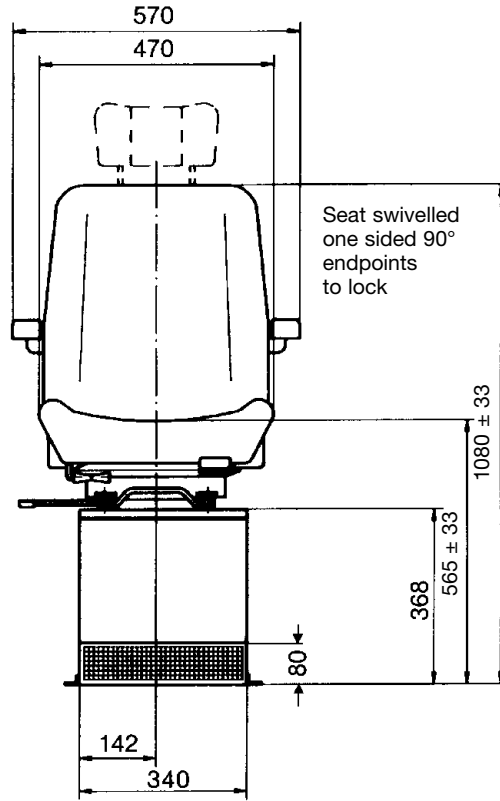
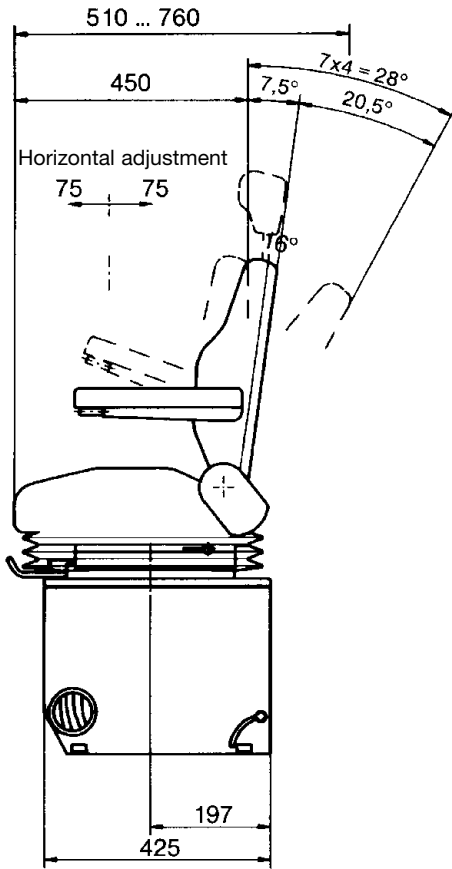
Technical detail:

Horizontal adjustment 150 mm

Backrest adjustment, fine control
inclination backwards 28°

Height and slope adjustment 65 mm

Pos.		Weight kg	Part No.	Type	Price EURO
1	Driver's seat standard design with air-permeable artificial leather cover black	25		KFS 81	
2	Driver's seat standard design with textil cover grey / black	25		KFS 82	
3					
4					
5	Headrest raint				
6	Armrest fully adjustable (2 pieces) 50 mm wide				
7	Armrest fully adjustable (2 pieces) 100 mm wide				
8	Backrest high + 100 mm inclination backwards max. 90°				
9	Backrest with lumbar support manual adjustment				
10					
11	Seat cushion deep adjustment mechanical 60 mm				
12					
13					
14	Seat cushion and backrest standard with heating element 24 V DC 42 Watt				
15					
16	Safety belt 2 point fixing				
17	Safety belt 4 point fixing (trouser braces belt)				
18					
19					
20					
21					
22					
23	Roller-bearing swivel system for seat (included in Pos. 1, 2)				
24	Console	10			
25	Heating 2 steps 2 x 2 kW 380 V AC with ventilator 380 V AC airvolume ca. 1000 m ³ /h with selector switch for heating / ventilator mounting into the console	10			





The crane driver's seat KFS 9 is ergonomically designed and provides a high grade of comfort.

The driver's seat is a low level mechanical suspension seat with an oilhydraulic vibration absorption system with weight adjustment.

All adjustment controls are positioned ergonomically within easy access.

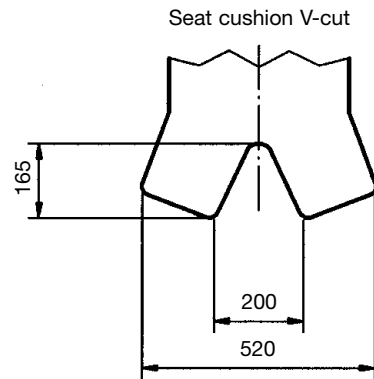
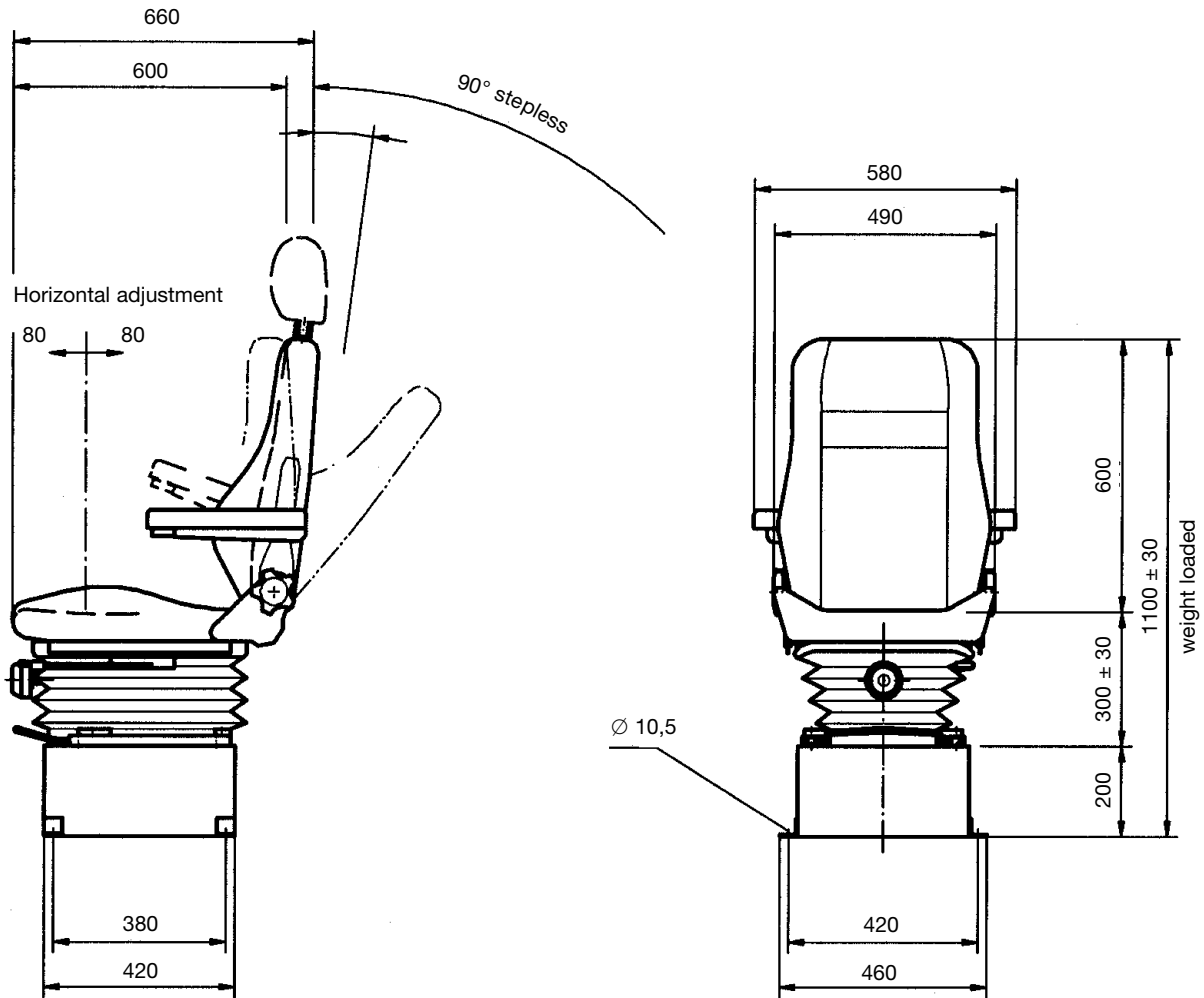
For this comfort driver's seat KFS 9 a lot of efficient accessories are available look Pos. 5-25.

The metal parts are protected against corrosion and painted black.

Technical detail:

Suspension stroke	80 mm
Weight adjustment	50-120 kg
Horizontal adjustment	160 mm
Backrest adjustment stepless inclination backwards	90°
Height and slope adjustment	60 mm

Pos.		Weight kg	Part No.	Type	Price EURO
1	Driver's seat standard design with air-permeable artificial leather cover black	25		KFS 91	
2	Driver's seat standard design with textil cover grey / black	25		KFS 92	
3					
4					
5	Headrest raint				
6	Armrest adjustable (2 pieces) 50 mm wide				
7	Armrest adjustable (2 pieces) 100 mm wide				
8					
9	Backrest with lumbar support manual adjustment 2 movement				
10	Backrest with lumbar support manual adjustment 4 movement				
11	Seat cushion deep prolongation + 35 mm				
12	Seat cushion V-cut (free sight to down) (Pos. 19 required)				
13	Seat contact 1 NO 1,5 A 24 V DC				
14	Seat cushion and backrest standard with heating element 24 V DC 47 Watt				
15					
16	Safety belt 2 point fixing				
17	Safety belt 4 point fixing (trouser braces belt)				
18					
19	Horizontal adjustment dual 160 + 120 mm (total 280 mm seat height + 30 mm)				
20	Pneumatic vibration absorption system with weight adjustment by compressor 24 V DC 8 Ampere				
21					
22					
23	Loose cover				
24	Console	10			
25					





The crane driver's seat KFS 10 is ergonomically designed and provides a high grade of comfort.

The driver's seat is a low level mechanical suspension seat with a pneumatic vibration absorption system with weight adjustment by compressor 24 V DC 8 Ampere.

All adjustment controls are positioned ergonomically within easy access.

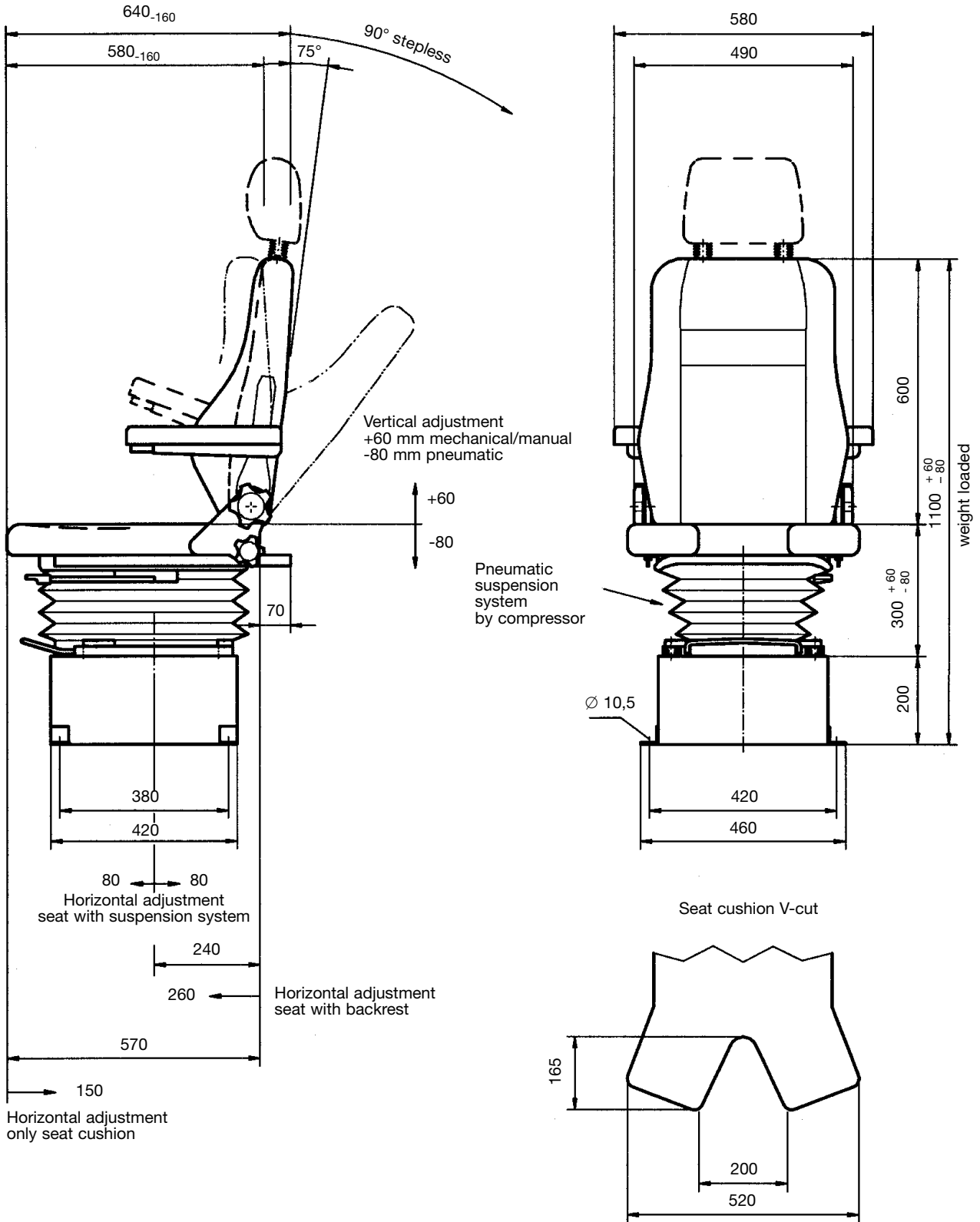
For this comfort driver's seat KFS 10 a lot of efficient accessories are available look Pos. 5-25.

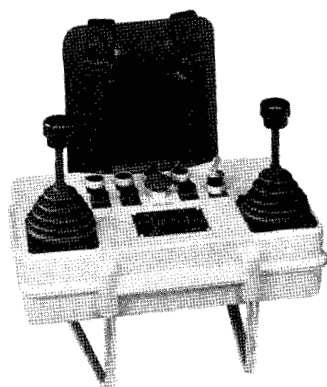
The metal parts are protected against corrosion and painted black.

Technical detail:

Suspension stroke pneumatic	80 mm
Weight adjustment	50-130 kg
Horizontal adjustment seat with suspension system	160 mm
Horizontal adjustment seat with backrest	260 mm
Horizontal adjustment only seat cushion	150 mm
Backrest adjustment stepless inclination backwards	90°
Height and slope adjustment mechanical	60 mm

Pos.		Weight kg	Part No.	Type	Price EURO
1	Driver's seat standard design with air-permeable artificial leather cover black	25		KFS 101	
2	Driver's seat standard design with textil cover grey / black	25		KFS 102	
3					
4					
5	Headrest raint				
6	Armrest adjustable (2 pieces) 50 mm wide				
7	Armrest adjustable (2 pieces) 100 mm wide				
8					
9	Backrest with lumbar support manual adjustment 2 movement				
10	Backrest with lumbar support manual adjustment 4 movement				
11					
12	Seat cushion V-cut (free sight to down included in Pos. 1, 2)				
13	Seat contact 1 NO 1,5 A 24 V DC				
14	Seat cushion and backrest standard with heating element 24 V DC 47 Watt				
15					
16	Safety belt 2 point fixing				
17	Safety belt 4 point fixing (trouser braces belt)				
18					
19					
20					
21					
22					
23					
24	Console	10			
25					





The portable control unit TS 1 accommodates all the devices necessary for control and monitoring. The chest panel and straps enable the operator to carry it without becoming tired. An adjustable carrying strap can also be fitted for use without the chest plate.

The control console is made of polyester (glass fibre reinforced plastic).
Colour RAL 7032 pebble-grey.
It can also be supplied as RAL 1018 yellow.

Permissible ambient temperature

Operation -40° C to +60° C

Storage -50° C to +80° C

Climate resistance

Damp heat constant

Damp heat cyclic

Degree of protection

DIN IEC 68 part 2-3

DIN IEC 68 part 2-30

control unit IP 65 with

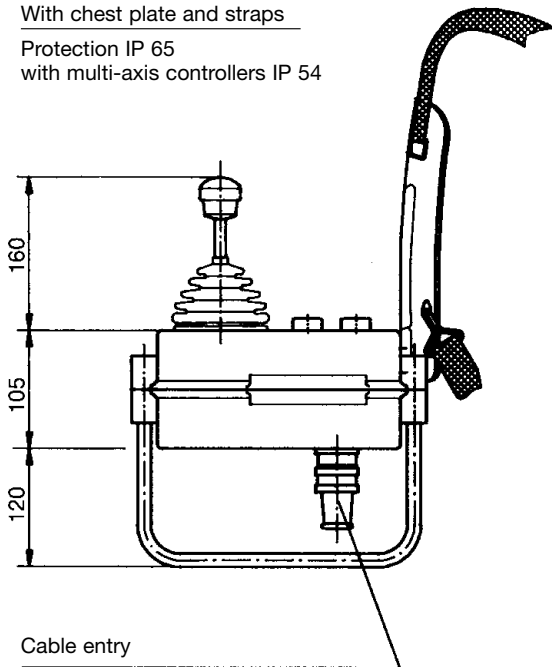
multi-axis controller IP 54

to IEC 529 DIN 40050

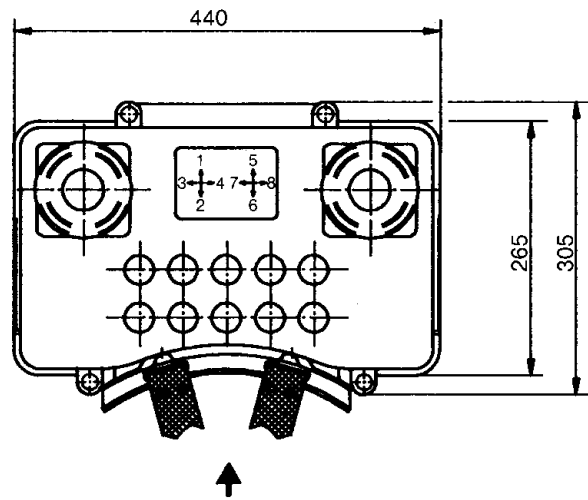
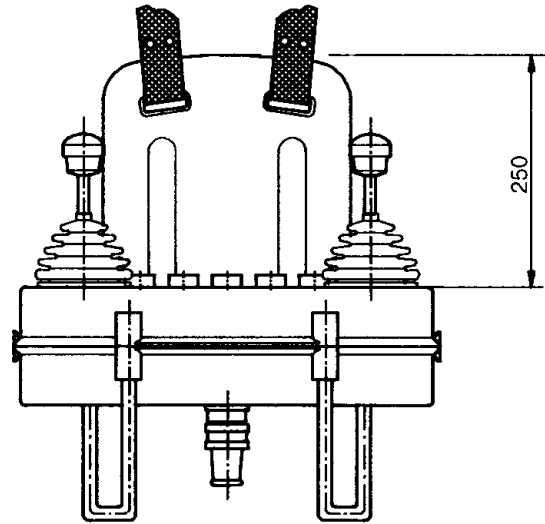
Pos.			Weight gramm	Part No.	Type	Price EURO
1	Control unit with chest plate and straps		3300		TS 1	
2	Control unit with straps		3000		TS 11	
3						
4	Plastic housing with surface resistance of less than < 10 ⁹ Ohm/cm					
5	Legs for control unit alu-tube 2 pieces		320			
6	Legs for control unit stainless steel-tube V2 A 2 pieces		600			
7	Reeling hooks for control unit stainless steel V2 A		1200			
8	Cable entry M 32 for cable 11-21 mm or M 40 for cable 19-28 mm		80			
9						
10	Multi-axis controller	look catalog 1/100				
11	Single-axis controller	look catalog 1/200				
12						
13	Control-switch	look catalog 1/220				
14	Command and indicating devices	look catalog 1/360				
15	Plug in socket 16-pole male insert	HAN 16 E without wiring	200			
16	Connector 16-pole female insert	HAN 16 E without wiring	250			
17	Plug in socket 24-pole male insert	HAN 24 E without wiring	320			
18	Connector 24-pole female insert	HAN 24 E without wiring	340			
19	Plug in socket 32-pole male insert	HAN 32 A without wiring	380			
20	Connector 32-pole female insert	HAN 32 A without wiring	400			
21	Cable Oelflex 18 x 1 mm ² 13,4 mm ø	-5° C to +80° C each metre	320			
22	Cable Oelflex 25 x 1 mm ² 15,4 mm ø	-5° C to +80° C each metre	450			
23	Cable Oelflex 34 x 1 mm ² 18,6 mm ø	-5° C to +80° C each metre	600			
24	Cable Neoflex 18 x 1 mm ² 19,2 mm ø	-30° C to +80° C each metre	470			
25	Cable Neoflex 24 x 1 mm ² 22,1 mm ø	-30° C to +80° C each metre	650			
26	Cable Neoflex 36 x 1 mm ² 26,1 mm ø	-30° C to +80° C each metre	910			
27						
30	Terminal block 2,5 mm ² without wiring each terminal				KL	
31	Terminal block 2,5 mm ² with wiring wire 1,5 mm ² each terminal				KL	
32	Wired plug in socket, connector or cable each wire terminal					
33						
34						
40	Indicating labels not engraved with 2 or 4 arrows					
41	Engraved each 10 characters					



With chest plate and straps
Protection IP 65
with multi-axis controllers IP 54

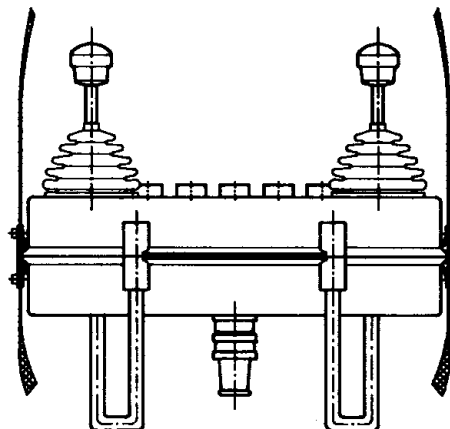
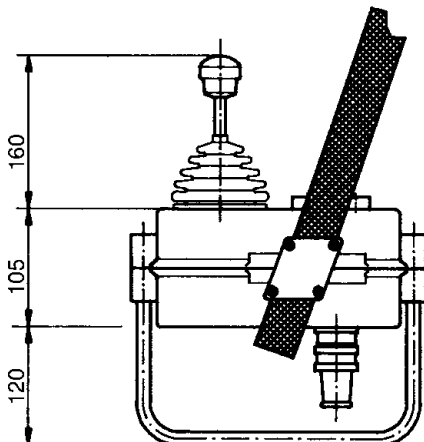


Cable entry
with anti-kink protection and
stain relief or connectors



Direction of view

With adjustable carrying strap
Protection IP 65
with multi-axis controllers IP 54





The portable control unit TS 2 accommodates all the devices necessary for control and monitoring. The chest panel and straps enable the operator to carry it without becoming tired. An adjustable carrying strap can also be fitted for use without the chest plate.

The control console is made of polyester (glass fibre reinforced plastic). Colour RAL 7032 pebble-grey. It can also be supplied as RAL 1018 yellow.

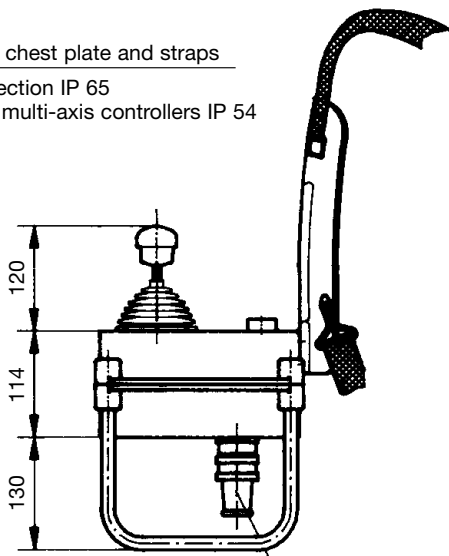
Permissible ambient temperature Operation -40° C to +60° C
Storage -50° C to +80° C

Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection control unit IP 65 with
multi-axis controller IP 54
to IEC 529 DIN 40050

Pos.			Weight gramm	Part No.	Type	Price EURO
1	Control unit with chest plate and straps		2400		TS 2	
2	Control unit with straps		2100		TS 21	
3	Control unit with bracket and straps		2400		TS 22	
4	Plastic housing with surface resistance of less than < 10 ⁹ Ohm/cm					
5	Legs for control unit alu-tube 2 pieces		320			
6	Legs for control unit stainless steel-tube V2 A 2 pieces		600			
7	Reeling hooks for control unit stainless steel V2 A		1200			
8	Cable entry M 32 for cable 11-21 mm or M 40 for cable 19-28 mm		80			
9	Cable entry 180° swivelling M 32 for cable 11-21 mm or M 40 for cable 19-28 mm		190			
10	Multi-axis controller	look catalog 1/100				
11	Single-axis controller	look catalog 1/200				
12						
13	Control-switch	look catalog 1/220				
14	Command and indicating devices	look catalog 1/360				
15	Plug in socket 16-pole male insert	HAN 16 E without wiring	200			
16	Connector 16-pole female insert	HAN 16 E without wiring	250			
17	Plug in socket 24-pole male insert	HAN 24 E without wiring	320			
18	Connector 24-pole female insert	HAN 24 E without wiring	340			
19	Plug in socket 32-pole male insert	HAN 32 E without wiring	380			
20	Connector 32-pole female insert	HAN 32 E without wiring	400			
21	Cable Oelflex 18 x 1 mm ² 13,4 mm ø	-5° C to +80° C each metre	320			
22	Cable Oelflex 25 x 1 mm ² 15,4 mm ø	-5° C to +80° C each metre	450			
23	Cable Oelflex 34 x 1 mm ² 18,6 mm ø	-5° C to +80° C each metre	600			
24	Cable Neoflex 18 x 1 mm ² 19,2 mm ø	-30° C to +80° C each metre	470			
25	Cable Neoflex 24 x 1 mm ² 22,1 mm ø	-30° C to +80° C each metre	650			
26	Cable Neoflex 36 x 1 mm ² 26,1 mm ø	-30° C to +80° C each metre	910			
27						
30	Terminal block 2,5 mm ² without wiring each terminal				KL	
31	Terminal block 2,5 mm ² with wiring wire 1,5 mm ² each terminal				KL	
32	Wired plug in socket, connector or cable each wire-connection					
33						
34						
40	Indicating labels not engraved with 2 or 4 arrows					
41	Engraved each 10 characters					

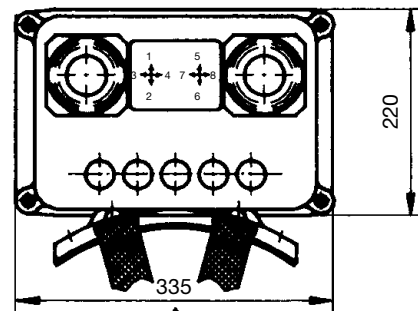
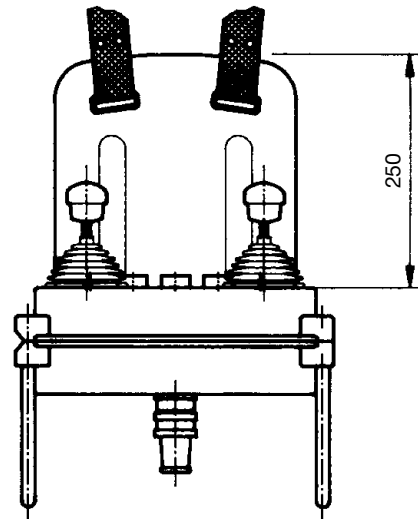


With chest plate and straps
Protection IP 65
with multi-axis controllers IP 54



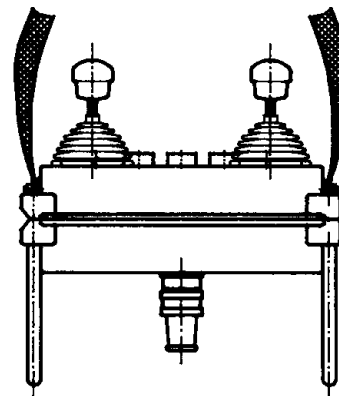
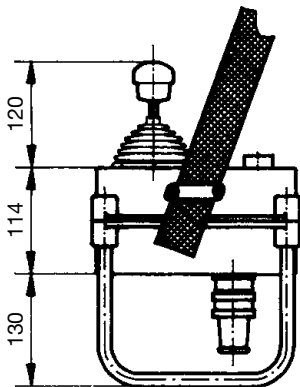
Cable entry

with anti-kink protection and stain relief or connectors

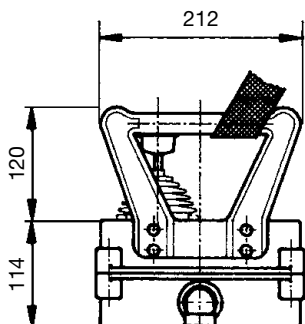


Direction of view

With adjustable carrying strap
Protection IP 65
with multi-axis controllers IP 54

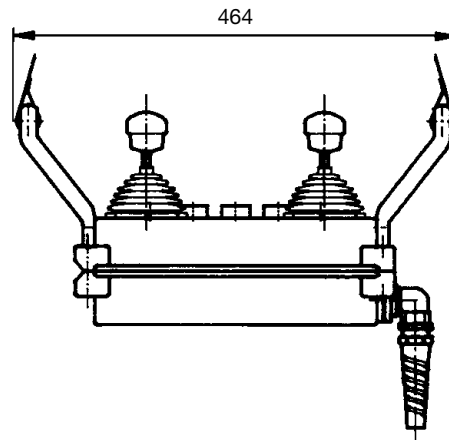


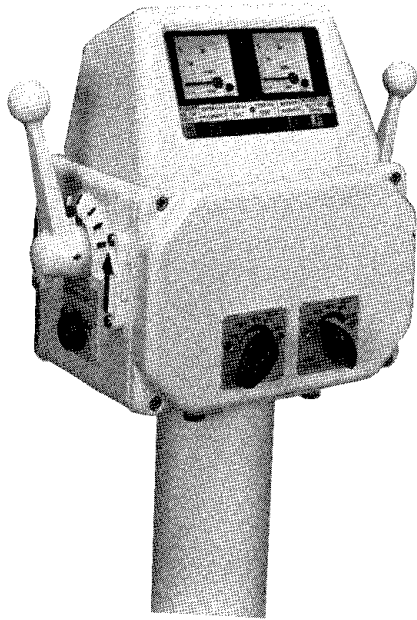
With bracket and cable entry swivelling
Protection IP 65 with multi-axis controllers IP 54



Cable entry 180°
swivelling

with anti-kink protection
and stain relief or connectors





The control pedestal U 22/32 accomodates the devices necessary for control and monitoring.

Ready wired, it can be quickly and easily installed on the sea deck.
The housing (pedestal head) is made of seawater-resistant aluminium.

**Contact complement 2 A 250 V AC 15 res. 1 A 24 V DC 13 (standard)
or 4 A 250 V AC 15 (special)**

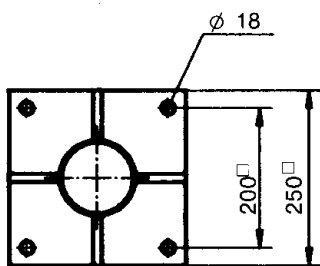
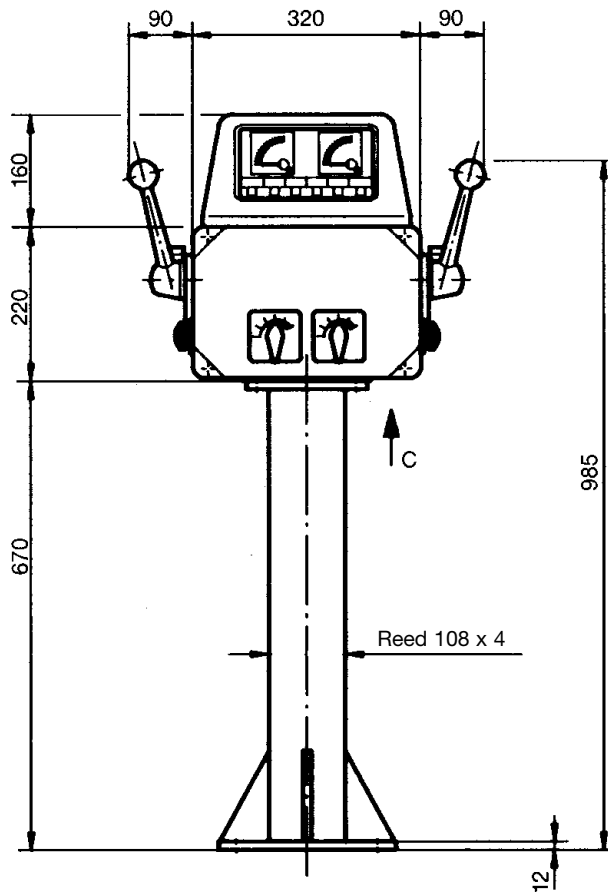
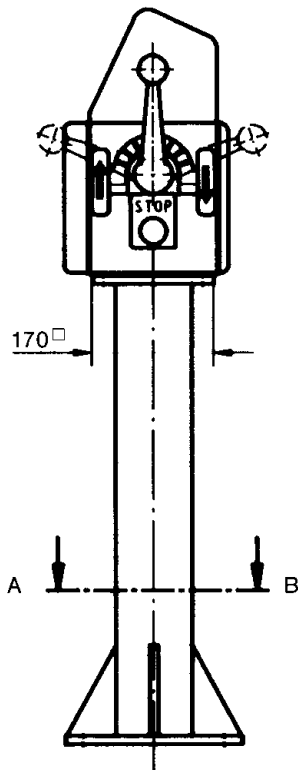
Surface treatment: Anti-corrosion primer, top coat: two coats of epoxy-resin paint, standard colour RAL 7032 pebble-grey

All non-painted metal parts are electrogalvanized and chromed.
All mechanical operating parts are made of non-rusting materials.

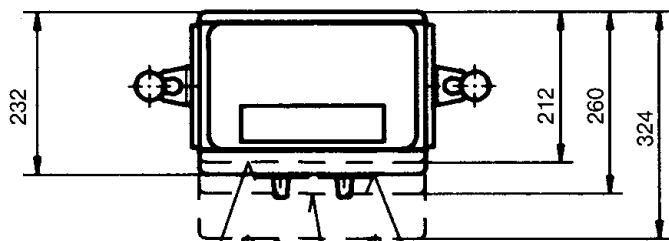
Permissible ambient temperature Operation -40° C to +60° C
Storage -50° C to +80° C

Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection IP 66 IEC 529 DIN 40050

Pos.			Weight kg	Part No.	Type	Price EURO
1	Housing U 22 / 32 with 1 narrow side-plate with pillar-gasket		6,8		U22/32	
2	Side-plate narrow gasket		1,8		FD	
3	Side-plate wide with gasket (required for command and indicating devices Pos. 22-26)		2,4		HD	
4	Hinged side-plate with gasket that can be locked in position (cover for command and indicating devices)		4,0		KD	
5	Monitoring devices cover with gasket for max. 2 monitors 72 x 72 mm or 4 monitors 72 x 36 mm and max. 6 indicating devices Pos. 28, 29		2,9		IA	
6	Pillar 108 mm ø 670 mm height with flange quadratic or round		18,8		RS	
10	Masterswitch with 6 contacts, with spring return in 0-position with ball handle and indicating labels drive		2,0		N61-03Z-HG	
11	Control-switches with 4 contacts with knob and indicating label		0,7		N62-02-KN	
12	Additional or subtract price each 2 contacts				± 01	
13	more variants look catalog 1/220					
14	Wire-wound potentiometer T 130 with centre tap linear life 10 ⁷ switching cycles resistance 2 x 0,5 / 1 / 2 / 5 / 10 kOhm 1,5 Watt wiper current max. 10 mA		0,07		P	
15	more potentiometer look catalog 1/240...					
20	Heating 20 Watt 220 or 110 V / 50/60 Hz		0,15		H	
21	Mushroom head push button latching 30 with indicating label	1 NO + 1 NC	0,1		PV	
22	Mushroom head push button 30 with indicating label	1 NO + 1 NC	0,1		P	
23	Push button 30 with indicating label	1 NO + 1 NC	0,1		D	
24	Selector switch 30 with indicating label	1 NO + 1 NC	0,1		W	
25	Indicator light 30 with indicating label	24 Volt	0,1		L	
26	Indicator light 30 with indicating label with transformer	220 / 24 Volt AC	0,1		L	
27	Contact block additional	1 NO + 1 NC				
28	Indicator light 22 with indicating label	24 Volt	0,05		L	
29	Indicator light 10 with indicating label	diode 24 Volt	0,03		L	
35	Power monitoring PQ 72 1 mA DC	Engraved your instructions	0,2		PQ	
36	Power monitoring PQ 72 x 36 1 mA DC	Engraved your instructions	0,3		PQ	
37	Ampere monitoring EQ 72 100 / 200 / 1 A	Engraved your instructions	0,2		EQ	
38	Ampere monitoring EQ 72 x 36 100 / 200 / 1 A	Engraved your instructions	0,3		EQ	
39	Monitoring illuminated	24 Volt				
40	Another electrical value are available					
45	Terminal block 2,5 mm ² without wiring	each terminal			KL	
46	Terminal block 2,5 mm ² with wiring wire 0,75 mm ²	each terminal			KL	
47						
48						
49						
50	Engraved each 10 characters					



View A - B

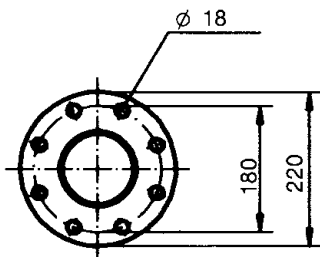


Side-plate narrow

Side-plate wide

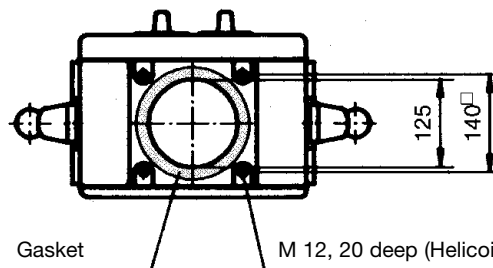
Hinged side-plate

Side-plate wide for hinged side-plate



View A - B

(option flange NW 100, DIN 2633)



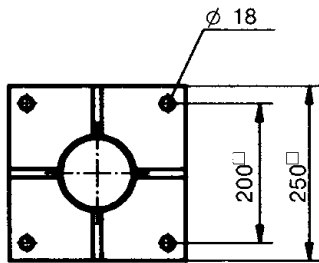
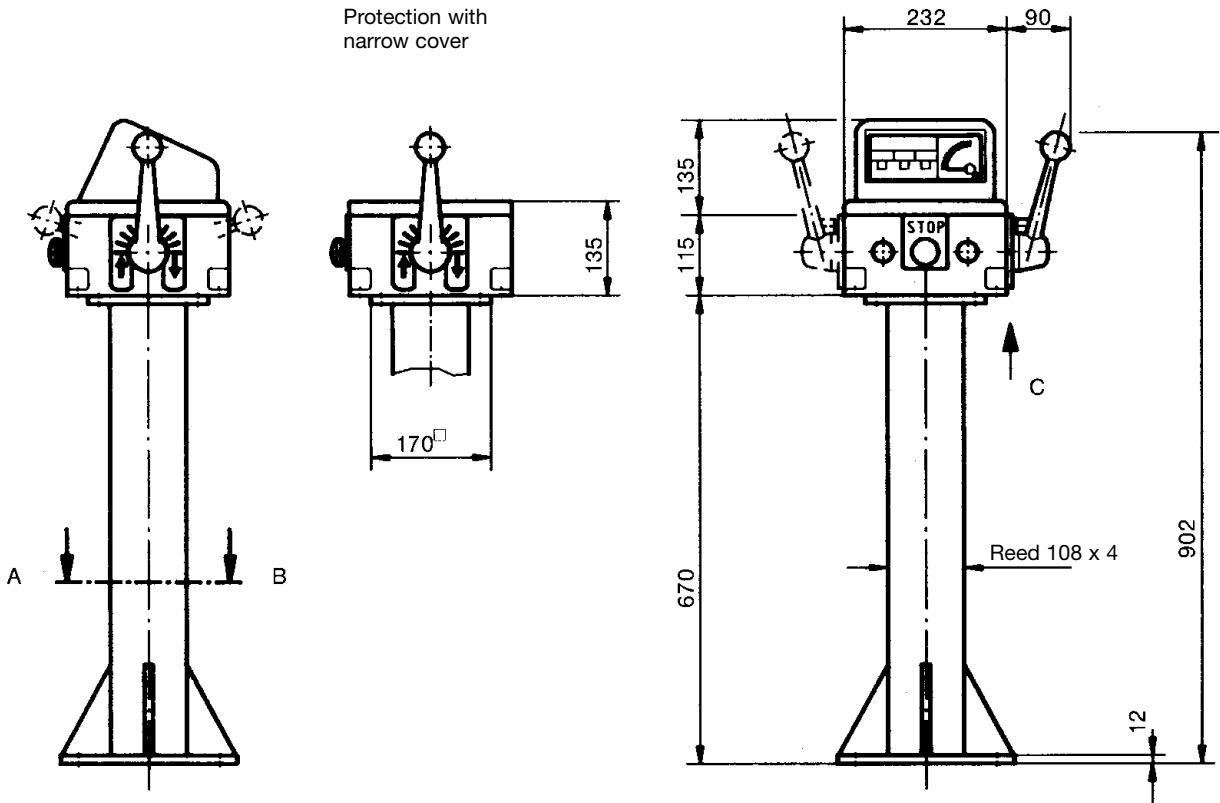
Gasket

M 12, 20 deep (Helicoil)

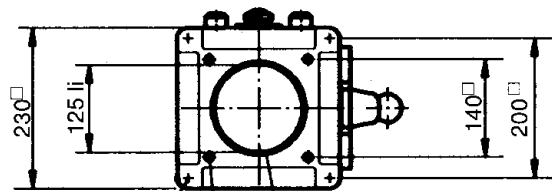
View C



Protection with narrow cover



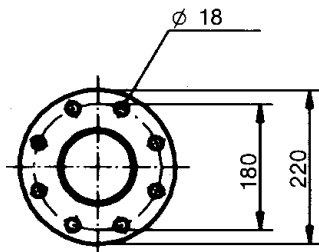
View A - B



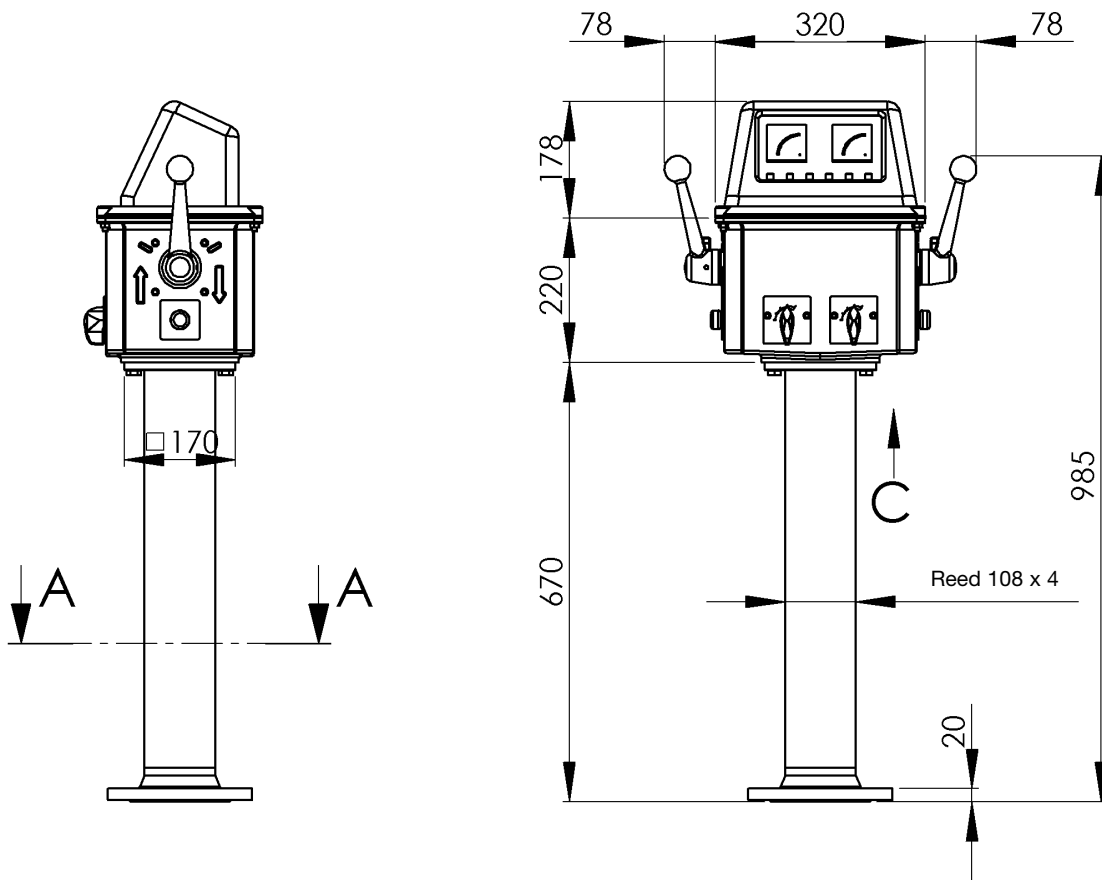
ø 9, mounting
at the top

M 12, 20 deep (Helicoil)
mounting at the bottom

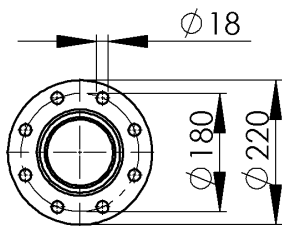
View C



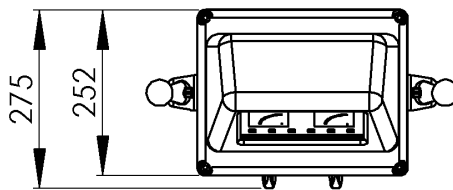
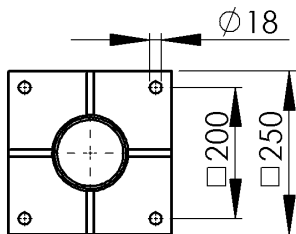
View A - B
(option flange NW 100, DIN 2633)



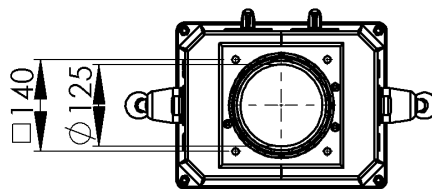
View A - A
Flange NW 100 DIN 2633

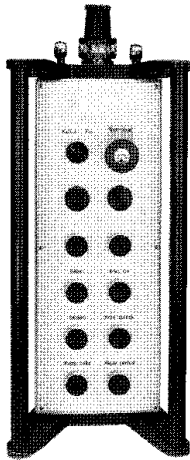


option flange 250 x 250



View C
(without pedestal)





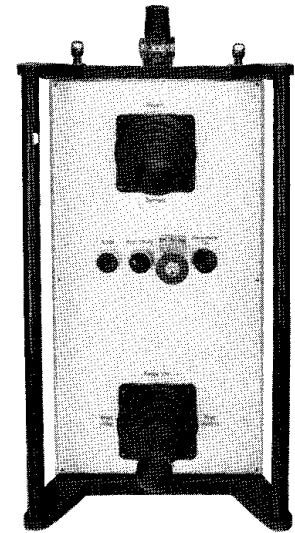
The pedant control units HT 1 and HT 2 contain the control and monitoring devices.

The units are easy to grasp and are protected against damage and unintentional operation of the controls.

Cable entry has anti-kink protection and strain relief. The pedants are made of sheet steel.

Device arrangements:

HT 11	max. 12 command or indicating devices	double-row
HT 12	max. 16 command or indicating devices	double-row
HT 13	max. 20 command or indicating devices	double-row
HT 21	max. 32 command or indicating devices	four-row
HT 22	max. 40 command or indicating devices	four-row



The multi-axis controller V 11 with 2 x 6 contacts to take away the mounting positions of 6 command or indicating devices.

The multi-axis controller V 62 with 2 x 6 contacts to take away the mounting positions of 8 command or indicating devices.

Surface treatment: Anti-corrosion primer, top coat: 2 coats of epoxy-resin paint, standard colour RAL 7032 pebble-grey.

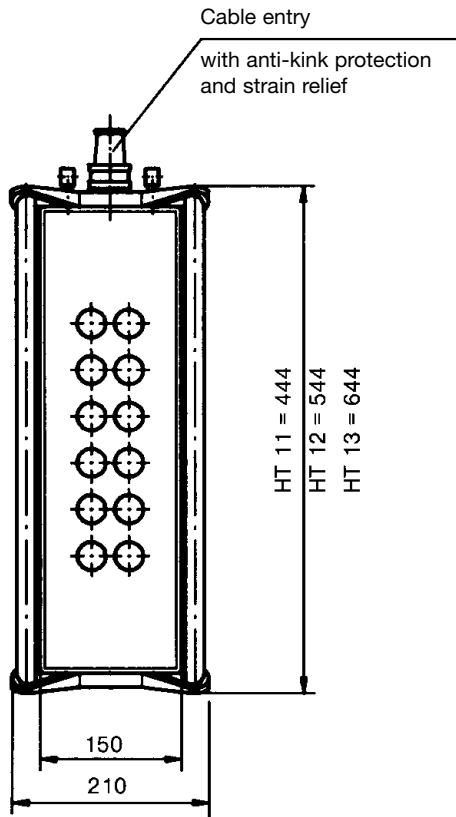
Permissible ambient temperature Operation -40° C to +60° C
Storage -50° C to +80° C

Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection IP 54 IEC 529 DIN 40050

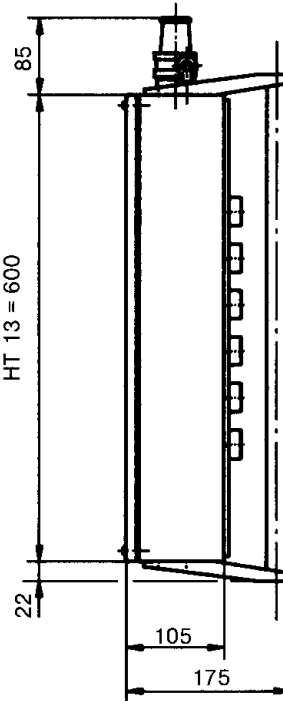
Pos.			Weight kg	Part No.	Type	Price EURO
1	Pedant control unit	150 x 400 x 105 mm	5,0		HT 11	
2	Pedant control unit	150 x 500 x 105 mm	5,5		HT 12	
3	Pedant control unit	150 x 600 x 105 mm	6,0		HT 13	
4						
5	Pedant control unit	260 x 500 x 105 mm	7,5		HT 21	
6	Pedant control unit	260 x 600 x 105 mm	8,3		HT 22	
7						
8						
9						
10	Cable entry M 32 with anti-kink protection and strain relief	cable 11 – 21 mm	0,15			
11	Cable entry M 40 with anti-kink protection and strain relief	cable 19 – 28 mm	0,20			
13	Cable entry M 50 with anti-kink protection and strain relief	cable 27 – 35 mm	0,25			
14						
15	Multi-axis controller V 6 or V 11 look catalog 1/100	1/110				
16	Control-switch	look catalog 1/220				
17	Command and indicating devices	look catalog 1/360				
18						
19						
20	Terminal block 2,5 mm ² without wiring	each terminal			KL	
21	Terminal block 2,5 mm ² with wiring wire 1,5 mm ²	each terminal			KL	
22						
23						
24						
25	Eloxal aluminium front plate silvery for HT 1		0,4			
26	Eloxal aluminium front plate silvery for HT 2		0,7			
27	Indicating labels not engraved with 2 or 4 arrows					
28	Engraved each 10 characters					



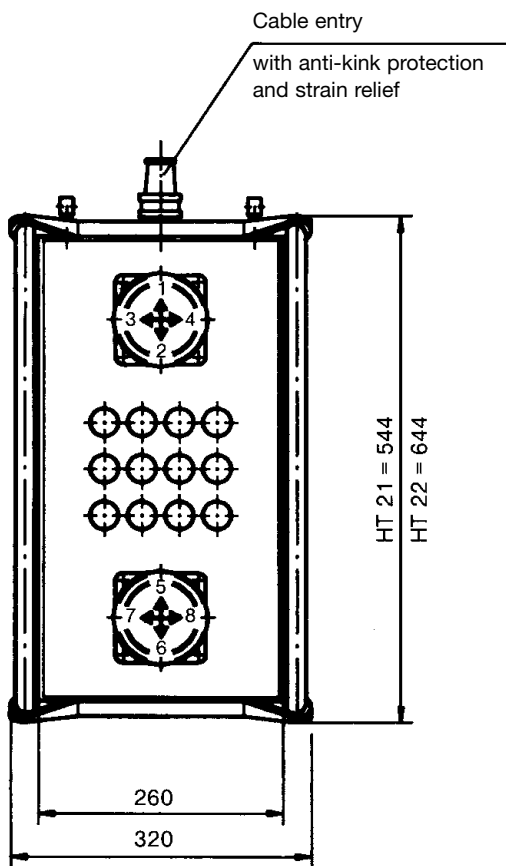
HT 1
Protection IP 54



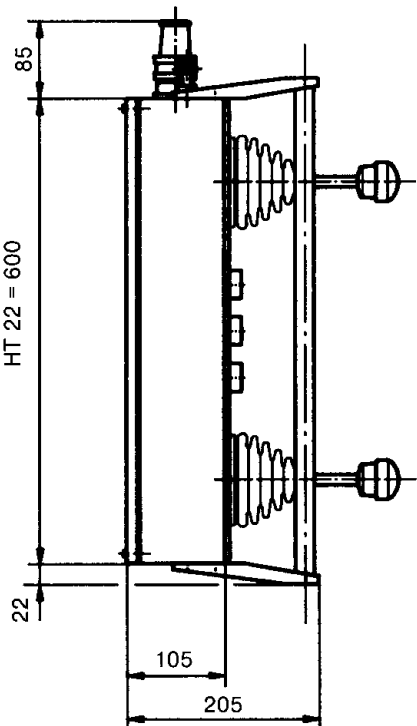
HT 11 = 400
HT 12 = 500
HT 13 = 600

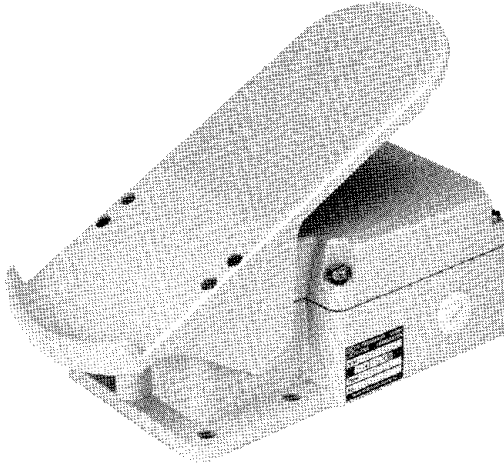


HT 2
Protection IP 54



HT 21 = 500
HT 22 = 600

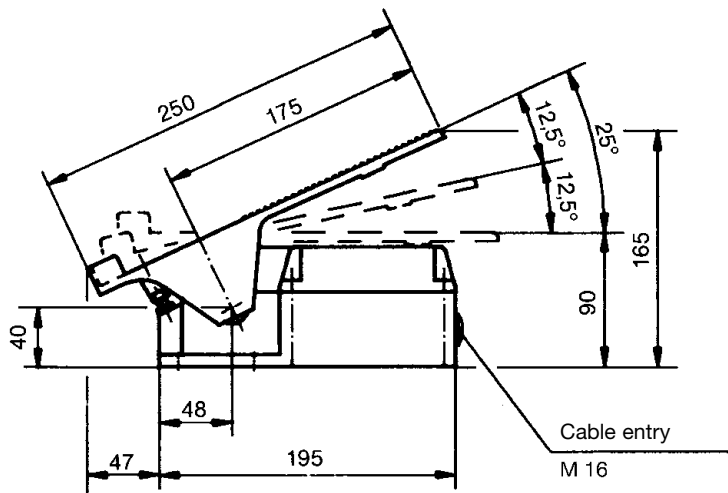




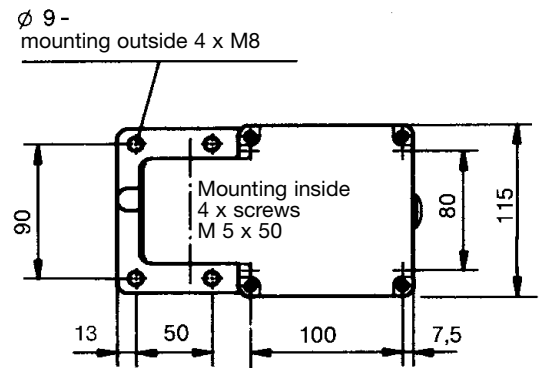
The pedal-controller P 7 and PP 7 is a rugged switching devices to IEC 947-5-1 EN 60 947 DIN VDE 0660-200, for footing applications.

Contact complement 2 A 250 V AC 15 res. 3 A 24 V DC 13

Surface treatment		Primer, top coat: 2 coats of epoxy-resin paint, standard colour RAL 7032 pebble-grey
Mechanical life	P 7 PP 7	6 million operating cycles 10 million operating cycles
Permissible ambient temperature		Operation -40° C to +60° C Storage -50° C to +80° C
Climate resistance		DIN IEC 68 part 2-3
Damp heat constant		DIN IEC 68 part 2-30
Damp heat cyclic		IP 54 IEC 529 DIN 40050
Degree of protection	P 7 PP 7	IP 65 IEC 529 DIN 40050

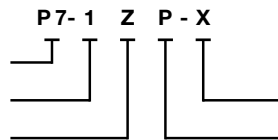


View at the top without rocker



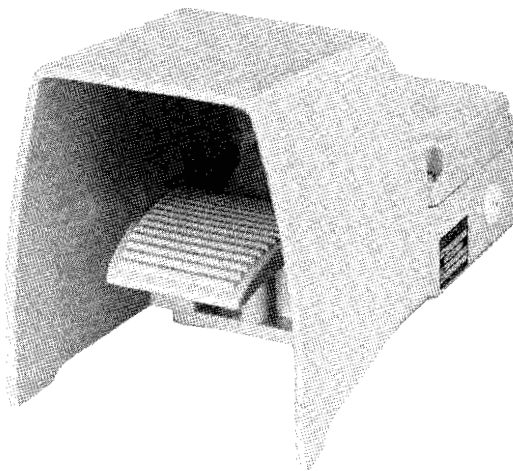
Example for type-sign

- Pedal-controller
- No. of contacts
- Spring return



Special please to describe
Potentiometer e.t.c.

Pos.		Weight gramm	Part No.	Type	Price EURO
1	Pedal-controller standard version	1700		P 7	
2	Pedal-controller heavy-duty version	1800		PP 7	
3					
4	Switching sequence max. 0-4 or max. 2-0-2	150			
5	Spring return in 0-position	100		Z	
6	Friction brake	50		R	
7					
8	No. of contacts (microswitch) max. 6 pcs.	30		1	
9	Switching program according contact-arrangement MS look catalog 5/001	40		2	
10	or to your contact-arrangement	50		3	
11					
12	Potentiometer e.t.c. with mounted Wire-wound potentiometer T 129 linear life 5×10^7 switching cycles resistance 1/2/4/10 kOhm 1,5 Watt wiper current max. 10 mA	70		P	
13	Prepared for mounting potentiometer shaft 6 mm adjusting-angel 300°			(P)	
14	More potentiometer e.t.c. look catalog 1/240...				
15					



The pedal-controller P 8 and PP 8 is a rugged switching devices to IEC 947-5-1 EN 60 947 DIN VDE 0660-200, for footing applications.

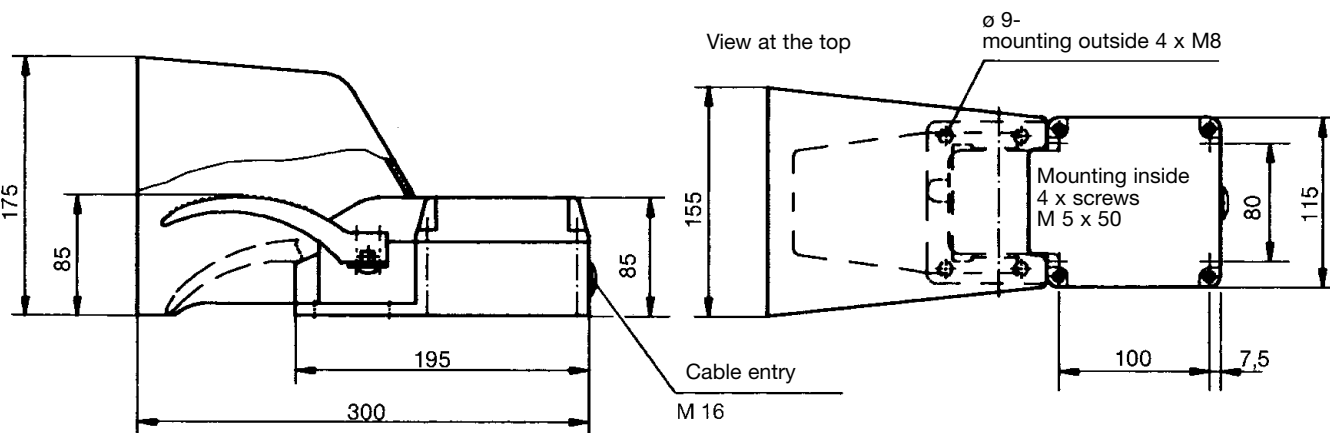
Contact complement 2 A 250 V AC 15 res. 3 A 24 V DC 13

Surface treatment: Primer, top coat: 2 coats of epoxy-resin paint, standard colour RAL 7032 pebble-grey

Mechanical life P 8 6 million (operating cycles)
PP 8 10 million (operating cycles)

Permissible ambient temperature Operation -40° C to +60° C
Storage -50° C to +80° C

Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection P 8 IP 54 IEC 529 DIN 40050
PP 8 IP 65 IEC 529 DIN 40050

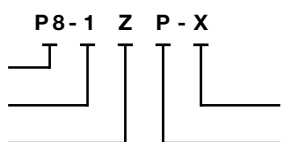


Example for type-sign

Pedal-controller

No. of contacts

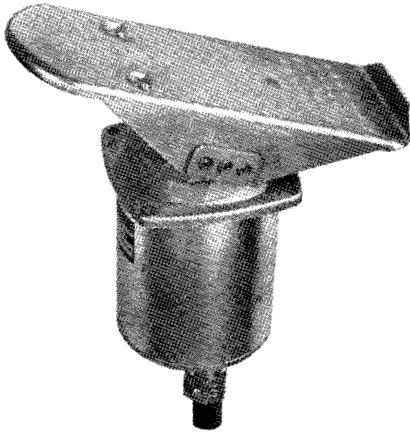
Spring return



Special please to describe

Potentiometer e.t.c.

Pos.		Weight gramm	Part No.	Type	Price EURO
1	Pedal-controller standard version	2500		P 8	
2	Pedal-controller heavy-duty version	2600		PP 8	
3					
4	Switching sequence max. 0-4	150			
5	Spring return in 0-position	100		Z	
6	Friction brake adjustable	50		R	
7					
8	No. of contacts (microswitch) max. 6 pcs.	30		1	
9	Switching program according contact-arrangement MS look catalog 5/001	40		2	
10	or to your contact-arrangement	50		3	
11					
12	Potentiometer e.t.c. with mounted Wire-wound potentiometer T 129 linear life 5×10^7 switching cycles resistance 1/2/4/10 kOhm 1,5 Watt wiper current max. 10 mA	70		P	
13	Prepared for mounting potentiometer shaft 6 mm adjusting-angle 300°			(P)	
14	More potentiometer e.t.c. look catalog 1/240...				
15					



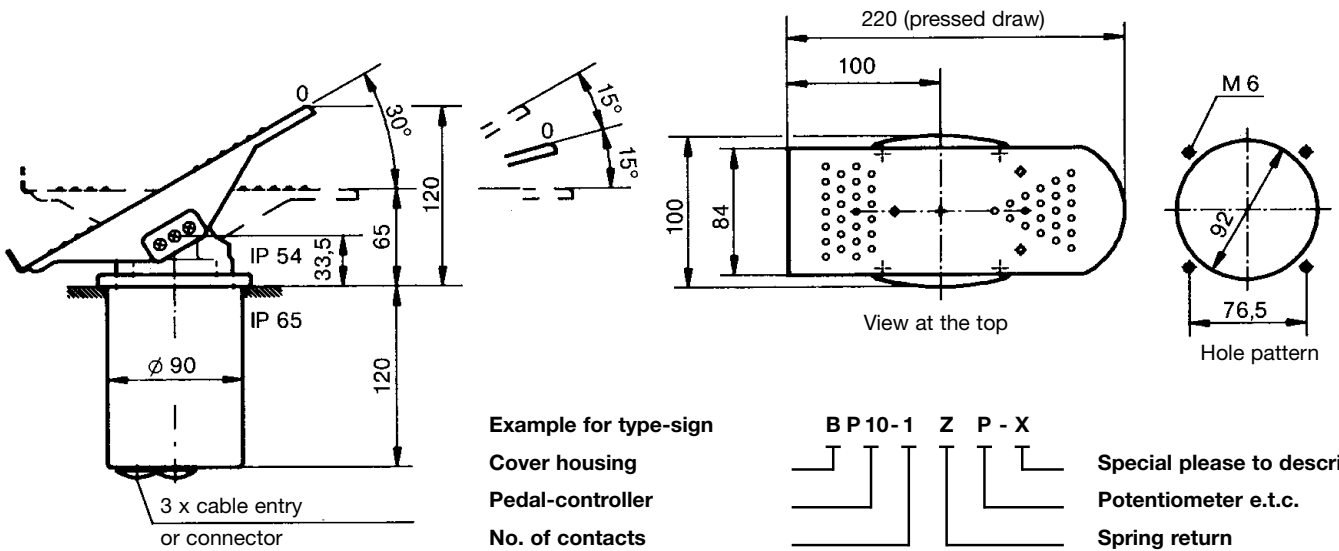
The pedal-controller P 10 / P 11 is a rugged switching device to IEC 947-5-1 EN 60947 DIN VDE 0660-200 for electro-hydraulic applications. The modular design enables the switching device to be used universally. The P 10 / P 11 is resistant to oil, maritime climate, ozone and UV radiation.

Contact complement 0,5 A 110 V AC 15 res. 1,5 A 24 V DC 13
I min > 0,2 mA 2 V DC 12 Gold plated for max. load of 0,12 Watt (standard)
or I max < 300 mA 0,4 V DC 12 max. capacity 0,12 Watt do not exceed!
I min > 0,2 mA 2 V DC 12 max. contact reliability for very low current (special)

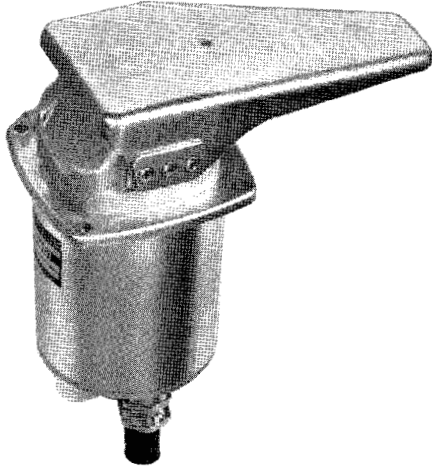
Mechanical life 8 million (operating cycles)
 Permissible ambient temperature Operation -40° C to +60° C
 Storage -50° C to +80° C

Climate resistance
 Damp heat constant DIN IEC 68 part 2-3
 Damp heat cyclic DIN IEC 68 part 2-30
 Degree of protection front IP 54 IEC 529 DIN 40050

Technical data look catalog 5/100



Pos.		Weight gramm	Part No.	Type	Price EURO
1	Pedal-controller standard version	1300		P 10	
2	Pedal-controller centre position notching max. 1-0-1	1300		P 11	
3	Switching sequence max. 0-3				
4	Spring return in 0-position	30		Z	
5	Friction brake adjustable	30		R	
6					
7	No. of contacts (microswitch) max. 3 pcs.	20		1	
8	Switching program according contact-arrangement MS look catalog 5/001	40		2	
9	or to your contact-arrangement	60		3	
10	Potentiometer e.t.c. with mounted Conductive-plastic potentiometer T 362 linear with centre tap life 10 ⁷ switching cycles Resistance 2 x 5 kOhm 0,5 Watt wiper current max. 1 mA	70		P	
11	Prepared for mounting potentiometershaft 6 mm adjusting angle 120°			(P)	
12	More potentiometer e.t.c. look catalog 1/240...				
13	Impedance converter Input ± 15 Volt, output ± 10 Volt / 5 mA			I	
14	Cover housing	300		B	
15	Filter plug M 20 for air-condition	20			
16	Cable entry M 20	30			
17	Plug in socket 14-pole female insert CPC 17 unwired	150			
18	Connector 14-pole male insert CPC 17 unwired	150			
19	Wiring plug in socket or connector each wired-connection				
20	Electronic (Amplifier, Profi-Bus, CAN-Bus) look catalog 3/510/...				



The pedal-controller P 12 is a rugged switching device to IEC 947-5-1 EN 60947 DIN VDE 0660-200 for electro-hydraulic applications. The modular design enables the switching device to be used universally. The P 12 is resistant to oil, maritime climate, ozone and UV radiation.

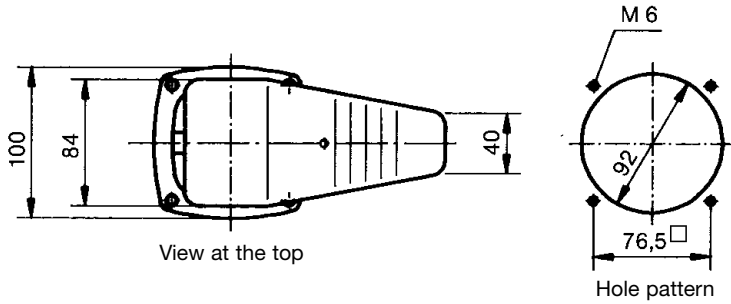
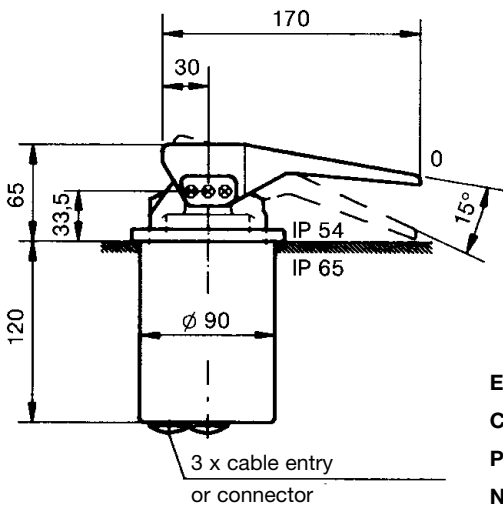
Contact complement 0,5 A 110 V AC 15 res. 1,5 A 24 V DC 13
I min > 0,2 mA 2 V DC 12 Gold plated for max. load of 0,12 Watt (standard)
or I max < 300 mA 0,4 V DC 12 max. capacity 0,12 Watt do not exceed!
I min > 0,2 mA 2 V DC 12 max. contact reliability for very low current (special)

Mechanical life 8 million (operating cycles)

Permissible ambient temperature Operation -40° C to +60° C
 Storage -50° C to +80° C

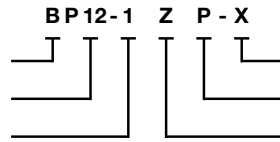
Climate resistance
 Damp heat constant DIN IEC 68 part 2-3
 Damp heat cyclic DIN IEC 68 part 2-30
 Degree of protection front IP 54 IEC 529 DIN 40050

Technical data look catalog 5/100



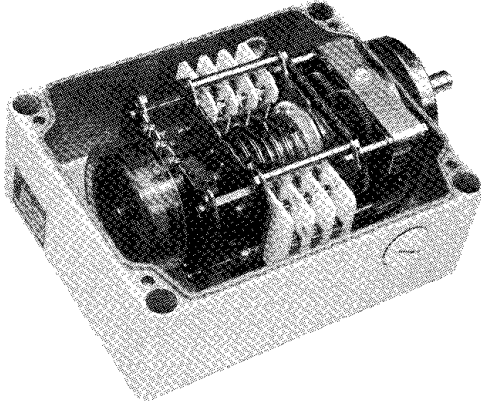
Example for type-sign

Cover housing
 Pedal-controller
 No. of contacts



Special please to describe
 Potentiometer e.t.c.
 Spring return

Pos.		Weight gramm	Part No.	Type	Price EURO
1	Pedal-controller standard version	1300		P 12	
2					
3	Switching sequence max. 0-3				
4	Spring return in 0-position	30		Z	
5	Friction brake adjustable	30		R	
6					
7	No. of contacts (microswitch) max. 3 pcs.	20		1	
8	Switching program according contact-arrangement MS look catalog 5/001	40		2	
9	or to your contact-arrangement	60		3	
10	Potentiometer e.t.c. with mounted				
11	Conductive-plastic potentiometer T 362 linear life 10 ⁷ switching cycles	70		P	
12	Resistance 5 kOhm 0,5 Watt wiper current max. 1 mA			(P)	
13	Prepared for mounting potentiometershaft 6 mm adjusting angle 120°				
14	More potentiometer e.t.c. look catalog 1/240...				
13	Impedance converter			I	
14	Input + 15 Volt, output + 10 Volt / 5 mA				
14	Cover housing	300		B	
15	Filter plug M 20 for air-condition	20			
16	Cable entry M 20 with anti-kink protection and strain relief	30			
17	Plug in socket 14-pole female insert CPC 17 unwired	150			
18	Connector 14-pole male insert CPC 17 unwired	150			
19	Wiring plug in socket or connector each wired-connection				
20	Electronic (Amplifier, Profi-Bus, CAN-Bus) look catalog 3/510/...				



The gearing limit switch GE 1 is a rugged switching device to IEC 947-5-1 EN 60947 DIN VDE 0660-200 designed for hoisting applications. The modular micro changeover contacts are positive opening to VDE 0113.

Contact complement 2 A 250 V AC 15 res. 3 A 24 V DC 13

The device is programmed by means of stepless adjustment of double cam disks, which can be provided from 18° to 192° contact disks according to the switching program required.

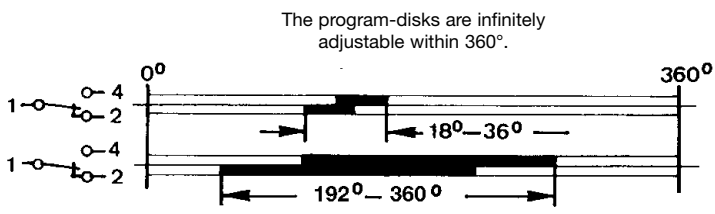
The following gear ratios (n:1) are possible:
2 3 4 5 6 7 8 10 12 13 15 16 18 20 25 26 28 30 40 50 60 66 75 80 88 91 104 110 121 140 154 160 176 220. Further ratios can be provided as required.
The maximum usable rotational angle at the spindle is 342°.

Surface treatment	Primer, top coat: 2 coats of epoxy-resin paint, standard colour RAL 7032 pebble-grey
Mechanical life	10 million (operating cycles)
Permissible ambient temperature	Operation -40° C to +60° C Storage -50° C to +80° C

Climate resistance	DIN IEC 68 part 2-3
Damp heat constant	DIN IEC 68 part 2-30
Damp heat cyclic	DIN IEC 68 part 2-30
Degree of protection (in housing)	IP 65 IEC 529 DIN 40050

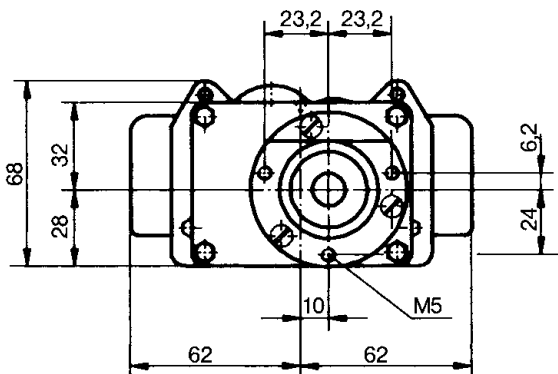
Technical data look catalog 5/100, T 576

Pos.			Weight gramm	Part No.	Type	Price EURO
1	Limit switch without gear	No. of contacts	2	350	2	
2			3	400	3	
3	Switching program with 18°, 24°, 30°, 36°, 45°, 60°, 75°, 90°, 110°, 120°, 176° or 192°		4	450	4	
4	Contact ways program-disks		5	500	5	
5			6	550	6	
6			7	600	7	
7			8	650	8	
8			9	700	9	
9			10	750	10	
10			11	800	11	
11			12	850	12	
12			13	900	13	
13			14	950	14	
14			15	1000	15	
15	or to your contact-arrangement		16	1050	16	
20	Gearing	Ratios (n : 1)		400		
21		2 : 1 to 20 : 1		450		
22		25 : 1 to 80 : 1		500		
23		88 : 1 to 121 : 1		550		
24		140 : 1 to 220 : 1 or ratios to your instructions		550		
25	Potentiometer e.t.c. with mounted Wire-wound potentiometer PW 70 d linear life 10 ⁷ switching cycles Resistance 1,2,5,10 kOhm 5 Watt wiper current max. 30 mA			100	P	
26	Prepared for mounting potentiometer (gearing metal)				(P)	
27	Prepared for mounting potentiometer e.t.c. adjusting angle variable More potentiometer e.t.c. look catalog 1/240...				(P)	
30	Aluminium housing U 17 / 13 for max. 8 contacts			1500	U	
31	Aluminium housing U 16 / 20 for max. 16 contacts			3000	U	
32	Aluminium housing U 16 / 35			3000	U	



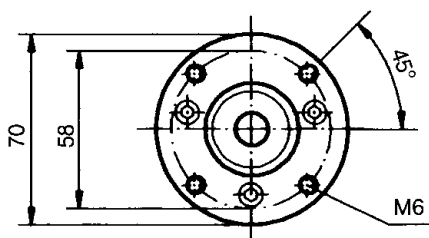
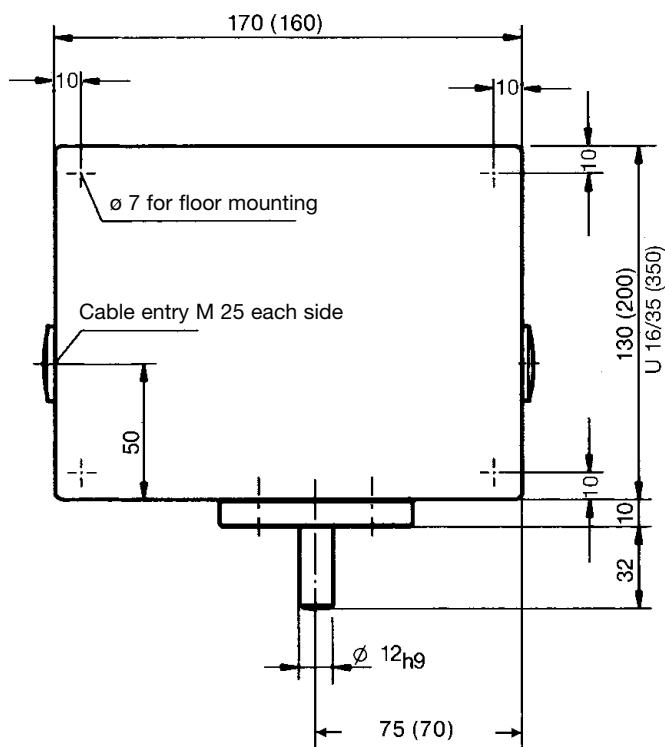
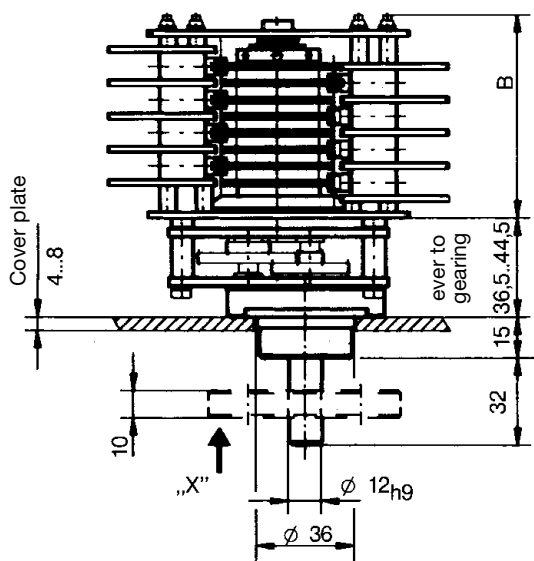
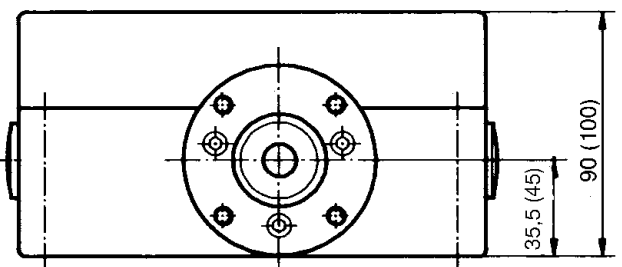


View without build-on flange



Aluminium housing ... U 17 / 13
Aluminium housing (...) U 16 / 20 and U 16 / 35

Protection IP 65



Build-on flange, view „X”

Type	No. of contacts	Dimension B
1	1	32
2	2	38,5
3	3	44,5
4	4	50,5
5	5	56,5
6	6	63
7	7	69
8	8	75

Type	No. of contacts	Dimension B
9	9	81
10	10	87
11	11	93
12	12	99
13	13	105,5
14	14	111,5
15	15	117,5
16	16	123,5

Example for type-sign

Aluminium housing

Gear limit switch

Gear ratios

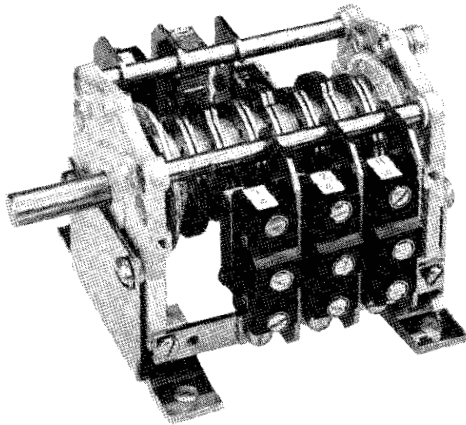
UGE 1-40 8 P - X



Special please to describe

Potentiometer e.t.c.

No. of contacts



The copy-cam controller KVS is a rugged switching device to IEC 947-5-1 EN 60947 DIN VDE 0660-200 and is designed for packing machines. The free spindle end is intended for a gearwheel, sprocket wheel or for direct coupling to the driven machine. Gearing for matching rotational speed can be supplied (see 3/200).

The work sequence of the machine is "copied". The drum controller is supported in a bearing, is extremely accurate and has a long service life. The contact blocks, micro-switches, proximity initiators (items 15-19) can be replaced individually or can be combined.

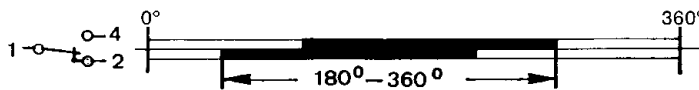
The unit is programmed via double cam disks which can be adjusted steplessly and which have a 180° contact deck.

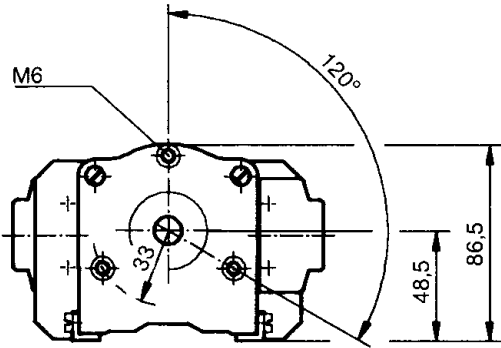
Surface treatment	Primer, top coat: 2 coats of epoxy-resin paint, standard colour RAL 7032 pebble-grey
Mechanical life	20 million (operating cycles)
Permissible ambient temperature	Operation -40° C to +60° C Storage -50° C to +80° C

Climate resistance	DIN IEC 68 part 2-3
Damp heat constant	DIN IEC 68 part 2-30
Damp heat cyclic	IP 54/65 IEC 529 DIN 40050
Degree of protection (in housing)	

Technical data look catalog 5/100, T 104

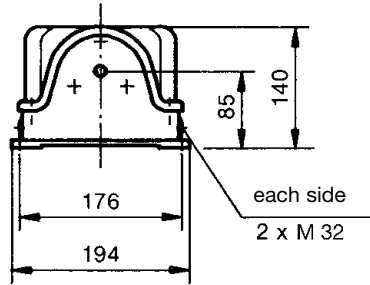
Proximity initiator
Type IN 5002-FPKG plus switching
Type IN 5002-FNKG minus switching
Connection voltage 18-30 V DC
Current loading 100 mA
Current consumption, not switched 10 mA
Ambient temperature, compensated -25° C/+80° C
Output: contact-free, short-circuit proof and protected against polarity reversal, switching state displayed via LED

Pos.		No. of contacts	Weight kg	Part No.	Type	Price EURO
1	Copy-cam controller	3	0,7		01	
2	with free shaft end 12 mm ø	5	0,9		02	
3	without contacts	7	1,1		03	
4	without proximity initiator	9	1,3		04	
5		11	1,5		05	
6	Switching program 180° each contact way	13	1,7		06	
7		15	1,9		07	
8	The program-disks are infinitely adjustable within 360°.	17	2,1		08	
9		19	2,3		09	
10		21	2,5		10	
11		23	2,7		11	
15	Cam operated switch 4 A 350 V AC 15	1 NC	1	0,08	5	
16						
17	Microswitch 8 A 250 V AC 15	1 NC + 1 NO	1	0,08	7	
18	Proximity initiator plus switching	1 NC or 1 NO	1	0,08	8	
19	Proximity initiator minus switching	1 NC or 1 NO	1	0,08	8	
20	Impulse device hall generator 15 Imp./rev via slot disk			0,08	I	
25	Second, free shaftend 12 mm ø				F	
26	Mounting angles 2 pieces each copy-cam controller			0,1	W	
30	Aluminium housing U 15 / 14 IP 54 up to type 03			1,7	U	
31	Aluminium housing U 15 / 21 IP 54 up to type 06			2,3	U	
32	Aluminium housing U 15 / 30 IP 54 up to type 11			2,9	U	
33	Aluminium housing U 20 / 15 IP 65 up to type 03			2,6	U	
34	Aluminium housing U 20 / 22 IP 65 up to type 06			3,3	U	

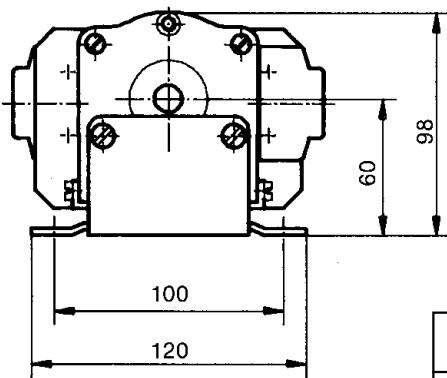
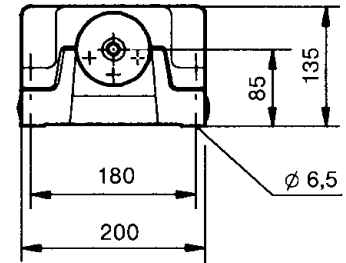


Mounting at the top

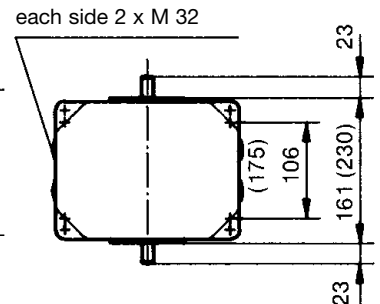
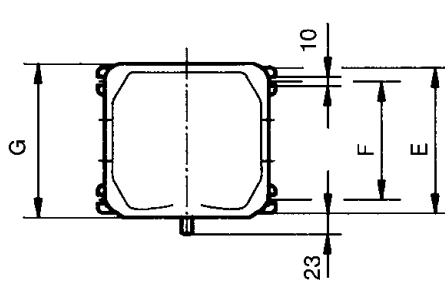
U 15 / ..
Protection IP 54



U 20 / ..
Protection IP 65

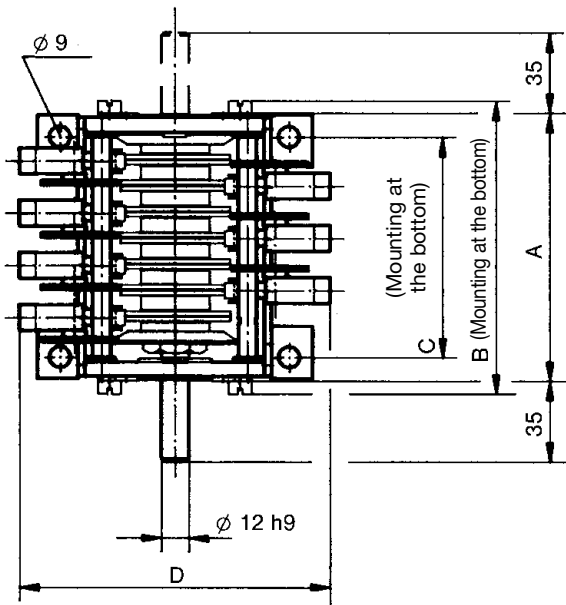


Mounting at the bottom
(with mounting angles)



U 15 / ..	Dimension E	Dimension F	Dimension G
/14	160	130	169
/21	230	200	239
/30	320	290	329

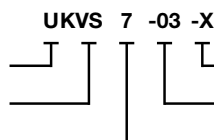
Type 03 = U 20 / 15
Type 06 = U 20 / 22 (...)



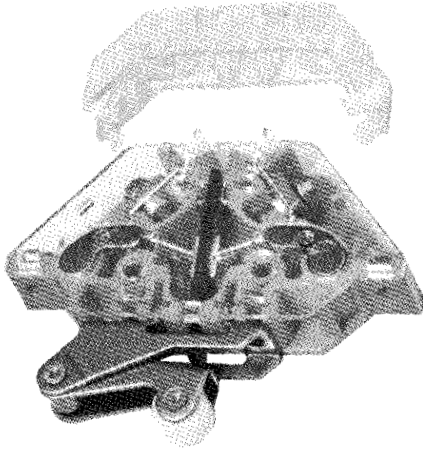
Type	No. of contact	Dimension A	Dimension B	Dimension C
01	3	72	87	51
02	5	95	110	74
03	7	118	133	97
04	9	141	156	120
05	11	164	180	143
06	13	187	202	166
07	15	210	225	189
08	17	233	248	212
09	19	256	271	235
10	21	279	294	258
11	23	302	317	281

Type	Dimension D	Screw-connection
KVS 5	125	M 4
KVS 7	145	M 3
KVS 8	140	M 3

Example for type-sign
Aluminium housing
Copy-cam controller
Contact-type



Special please to describe
No. of contacts



The DC contact block to IEC 947-5-1 EN 60947 DIN VDE 0660-200 and VDE 0670/4 § 20 is used for signalling and announcement applications. The snap-action mechanism prevents slow contact opening when the plunger is operated slowly. Quenching of the arc that occurs with DC is supported by two-capacity permanent magnets. These are arranged so that the polarity can be ignored when connecting +/- cabling.

However, the polarity of the quenching magnets must be noted when installing the contact blocks to prevent the magnets adversely affecting each other. Contact blocks in four different colours are available for polarity identification of the magnets when fitted (see diagram below left).

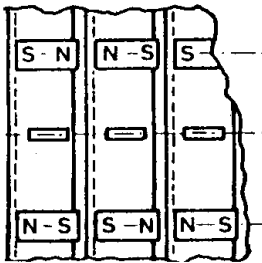
The contact blocks may only be installed on non-magnetizable materials with screws, etc. made of non-ferrous metal. The self-cleaning silver contacts are designed for low switching frequency, low currents and voltages. Gold coated contacts can be supplied (approx. 0,2 µ), less than 42 Volt required. The screw connection M3.5 at the side is suitable for 2 conductors max. 2.5 mm². The plug-in connection at the top 4.8 x 0.8 mm DIN 46247.

Several contact blocks can be plugged on top of each other and operated jointly. The plug-type terminals are then only accessible on the top unit. The contact blocks can be provided with shock protection to DIN VDE 0106 Part 100.

Please consult our technical department in the event of: application in extreme nuisance, confined switching points or increased breaking currents.

blue grey blue
green yellow green

———— Normally closed (NC)
———— Normally open (NO)



Unless otherwise requested, equal quantities grey/blue or yellow/green will be supplied.

Switching capacity

	NC	NO	Time constant
250 V DC	2 A	1 A	20 ms
125 V DC	4 A	3 A	20 ms
50 V DC	6 A	6 A	20 ms
30 V DC	10 A	10 A	20 ms
250 V AC 15	6 A	6 A	

Mechanical life
Electrical service life

2 million operating cycles
50.000 operating cycles
at 2 A 250 V DC L/R 20 ms

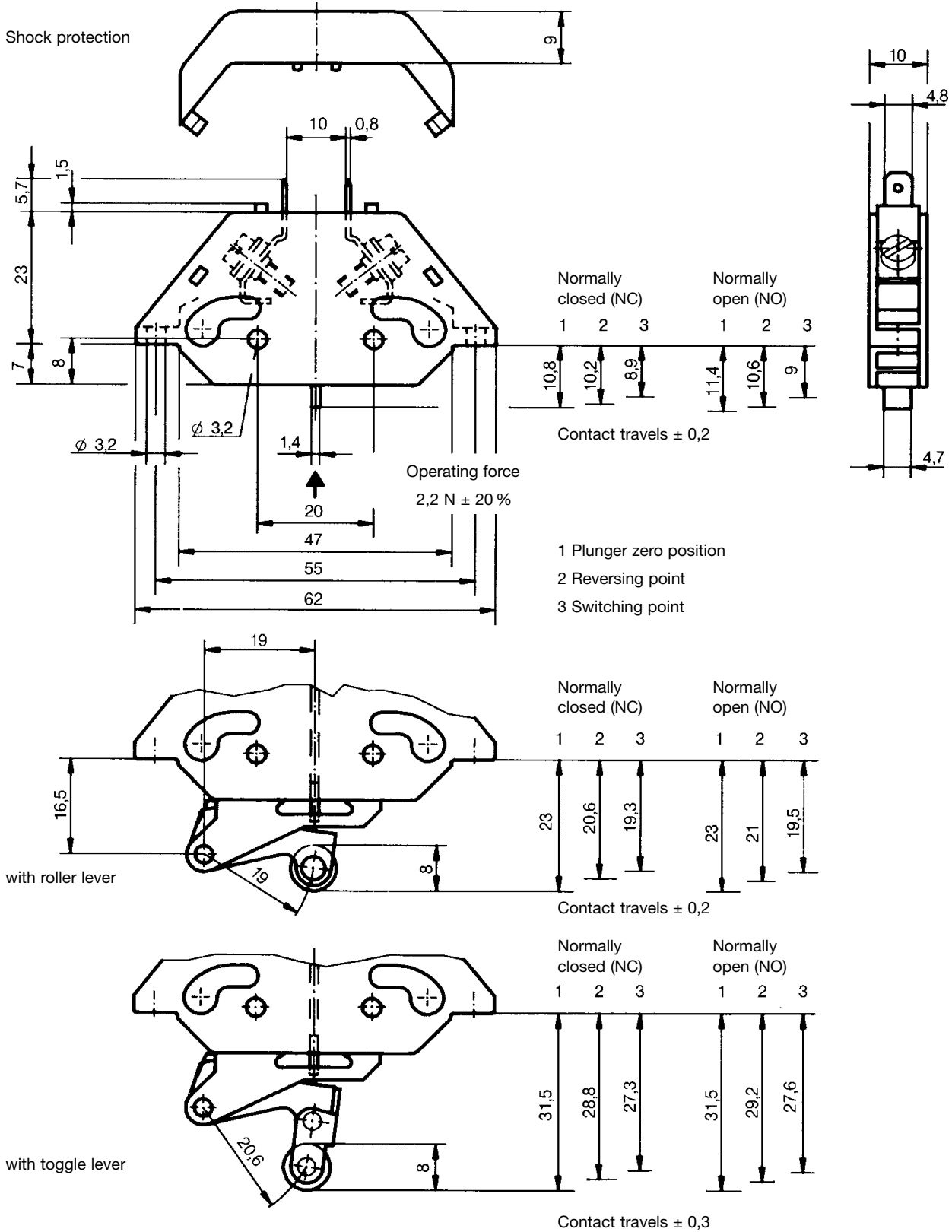
Permissible ambient temperature

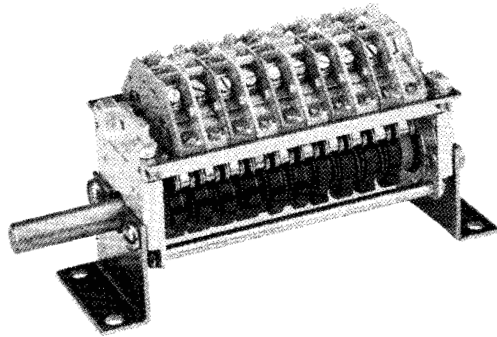
Operation -40° C to +60° C
Storage -50° C to +80° C

Climate resistance
Damp heat constant
Damp heat cyclic
Degree of protection

DIN IEC 68 part 2-3
DIN IEC 68 part 2-30
IP 40 IEC 529 DIN 40050

Pos.		Weight gramm	Part No.	Type	Price EURO
1	DC-contact normally closed (NC) Colour code grey or blue	20		SO 1.10	
2	DC-contact normally open (NO) Colour code yellow or green	20		SS 1.10	
3	Shock protection KEG 142 to DIN VDE 0106 Part 100				
4	Roller lever	10		R	
5	Toggle lever (switching in one direction only)	15		K	
6	Plug-in connection at side 4,8 x 0,8 mm (2 pieces)				
7	Contacts gold-coated approx. 0,2 µm				
8	Contact without quenching magnets (for AC only) subtract price				
9	Contact without quenching magnets (for AC only) and without snap-action mechanism subtract price				





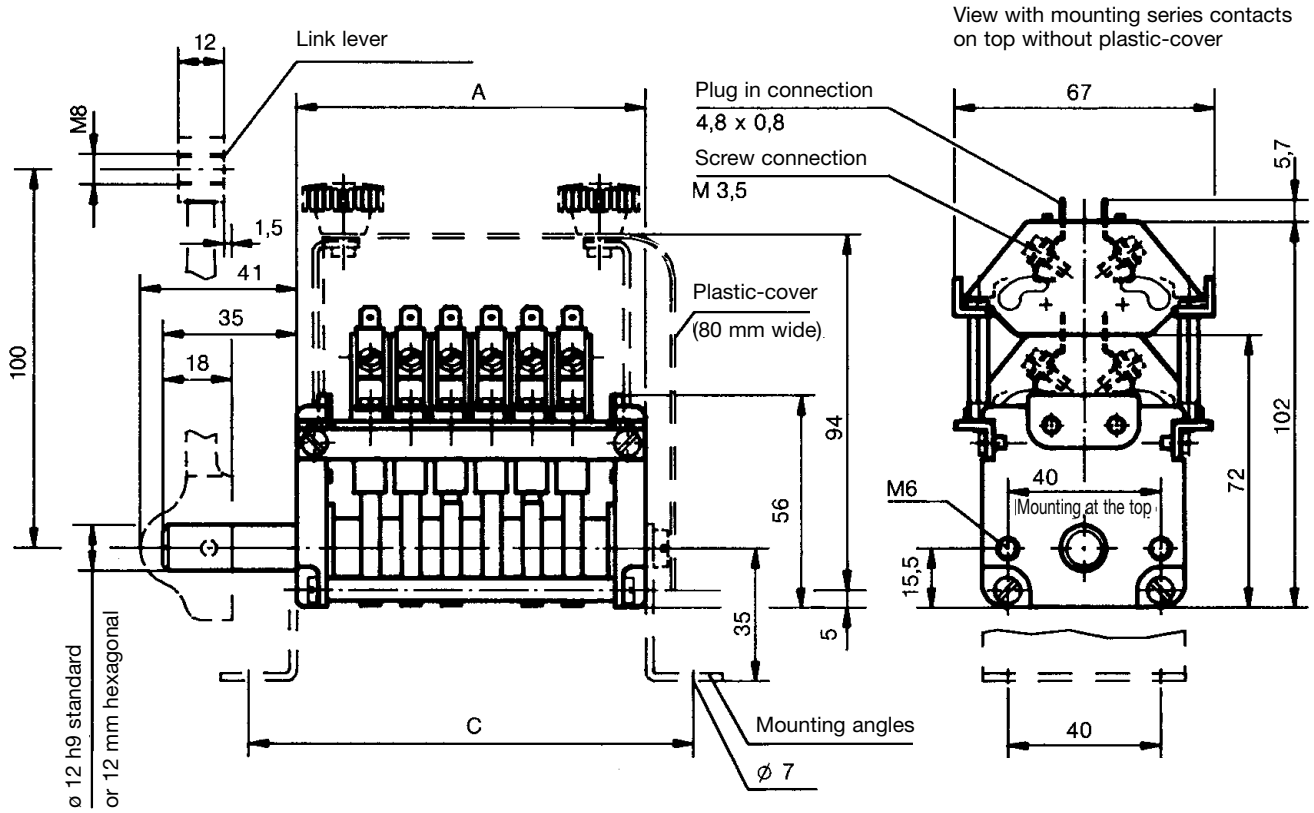
The cam controller NU 1 is used as a signal and announcement switch in HV systems. This rugged switching device to IEC 947-5-1 EN 60947 DIN VDE 0660-200 and VDE 0670/4 § 20 has cam disks made of insulation material that can be set at 10° intervals. **The switching rating of the contacts (NC with snap-action mechanism) is 6 A 250 V AC 15 or 2 A 250 V DC. Time constant L/R = 20 ms.** NO contacts can also be supplied. The DC contact blocks are designed to permit series assembly, which can then be operated simultaneously. This requires additional components for mounting the contacts.

Mechanical life 2 million operating cycles
Permissible ambient temperature Operation -40° C to +60° C
Storage -50° C to +80° C

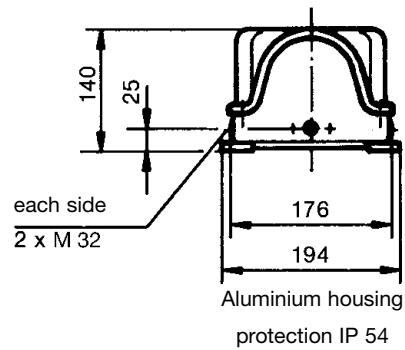
Climate resistance
Damp heat constant DIN IEC 68 part 2-3
Damp heat cyclic DIN IEC 68 part 2-30
Degree of protection (in housing) IP 54 IEC 529 DIN 40050

Technical data look catalog 5/100

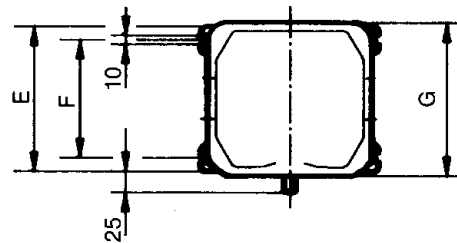
Pos.		No of contact	Weight gramm	Part No.	Type	Price EURO
1	Signal-cam controller	2	350		2	
2	with free shaftend 12 mm ø standard	4	460		4	
3	or 12 mm hexagonal	6	570		6	
4	Switching program	8	680		8	
5		10	790		10	
6		12	900		12	
7		14	1010		14	
8	or to your contact-arrangement	16	1120		16	
9	Switching program to your contact-arrangement	2				
10	Components for mounting series contacts on top	4	110		+4	
11	with (DC-contacts)	8	200		+8	
12		12	290		+12	
13		16	380		+16	
14						
15	Second free shaftend 12 mm ø standard or 12 mm hexagonal				F	
16	Spring return in 0-position		110		Z	
17	Switching sequence 4-0-4					
18	Mounting angles 2 pieces each signal-cam controller		80		W	
19	Link lever for shaft 12 mm ø standard or 12 mm hexagonal		70		GH	
21	Plastic-cover (Astralon)	up to max. 4			A	
22	(Dust and shock protection)	8			A	
23		12			A	
24		16			A	
25	Shock protection KEG 142 for DC-contacts to DIN VDE 0106 Part 100					
30	Aluminium housing U 15 / 14 up to type 6		1700		U	
31	Aluminium housing U 15 / 21 up to type 12		2300		U	
32	Aluminium housing U 15 / 30 up to type 16		2900		U	



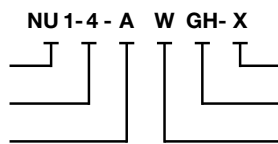
Type	No. of contacts	Dimension A	Dimension C
02	2	49,0	74,0
04	4	70,2	95,2
06	6	91,4	116,4
08	8	112,6	137,6
10	10	133,8	158,8
12	12	155,0	180,0
14	14	176,2	201,2
16	16	197,4	222,4



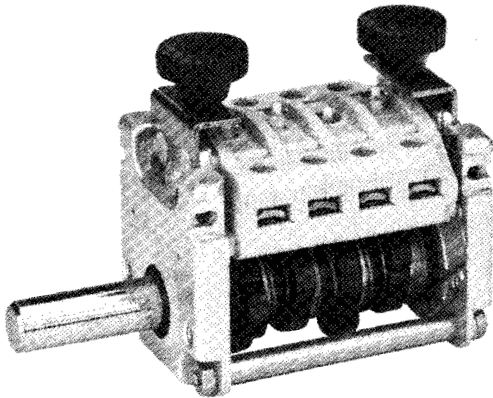
U 15 / ..	Dimension E	Dimension F	Dimension G
/14	160	130	169
/21	230	200	239
/30	320	290	329



Example for type-sign
Signal-cam controller
No. of contacts
Plastic-cover



Special please to describe
Link rod
Mounting angles

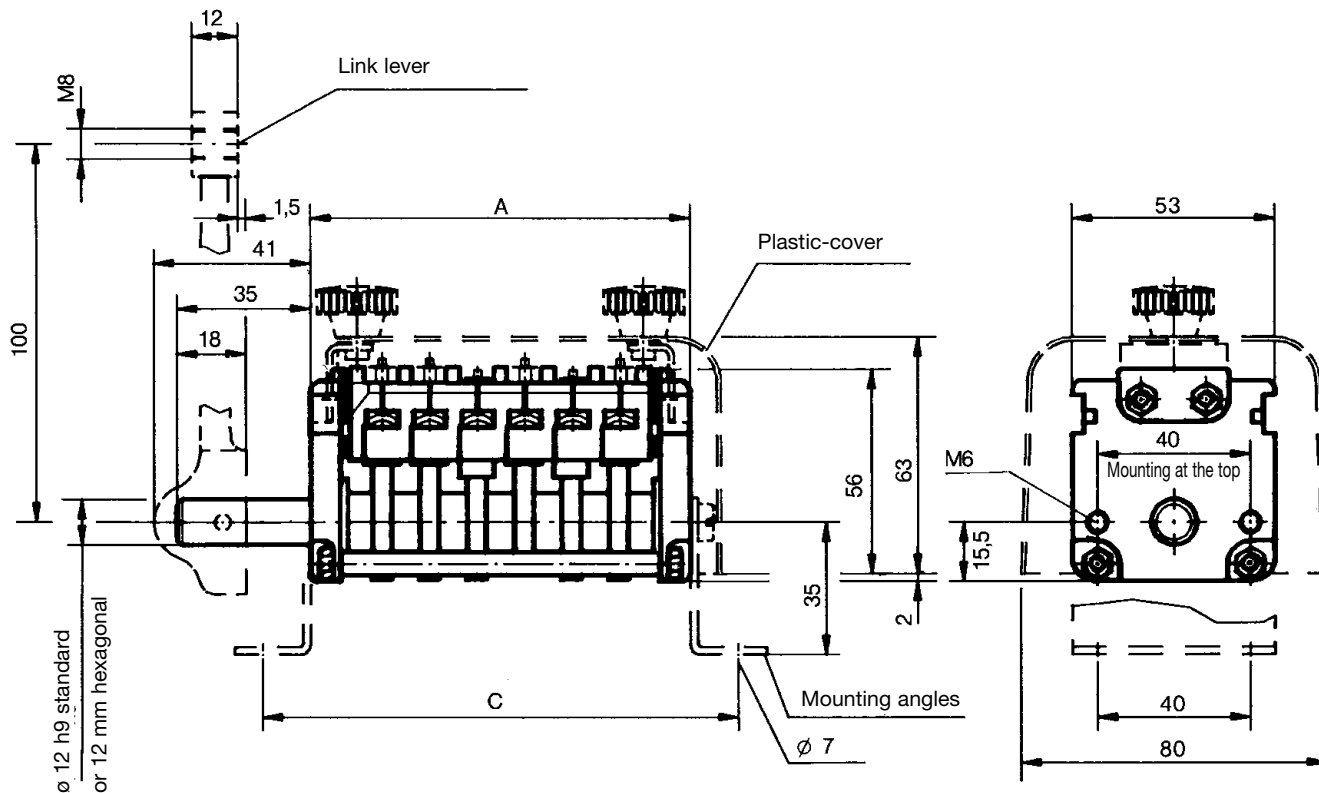


The cam controller NU 2 is used as a signal and announcement switch in HV systems. This rugged switching device to IEC 947-5-1 EN 60947 DIN VDE 0660-200 has cam disks made of insulation material that can be set at 10° intervals.

The switching rating of the contacts (positively opened) is 4 A 350 V AC 15 res. 1 A 24 V DC 13.

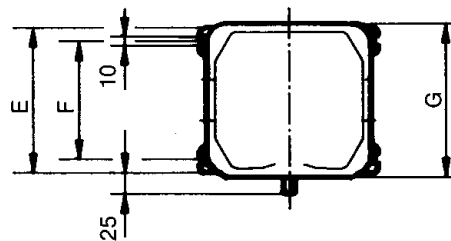
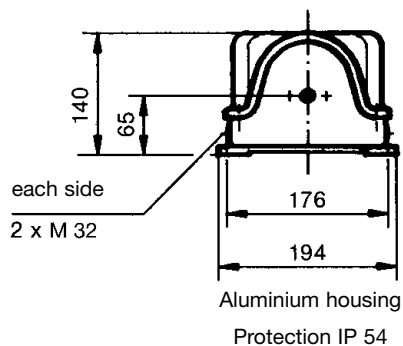
Mechanical life	6 million operating cycles
Permissible ambient temperature	Operation -40° C to +60° C Storage -50° C to +80° C
Climate resistance	
Damp heat constant	DIN IEC 68 part 2-3
Damp heat cyclic	DIN IEC 68 part 2-30
Degree of protection (in housing)	IP 54 IEC 529 DIN 40050
Technical data look catalog 5/100	

Pos.		No. of contact	Weight gramm	Part No.	Type	Price EURO
1	Signal-cam controller	2	280		2	
2	with free shaftend 12 mm ø standard	4	380		4	
3	or 12 mm hexagonal	6	480		6	
4	Switching program	8	580		8	
5		10	680		10	
6		12	780		12	
7		14	880		14	
8	or to your contact-arrangement	16	980		16	
9	Switching program to your contact-arrangement	2				
10						
11	Second free shaftend 12 mm ø standard or 12 mm hexagonal				F	
12	Spring return in 0-position		110		Z	
13	Switching sequence 4-0-4					
14	Mounting angles 2 pieces each signal-cam controller		80		W	
15	Link lever for shaft 12 mm ø standard or 12 mm hexagonal		70		GH	
21	Plastic-cover (Astralon)	up to max. 4			A	
22	(Dust and shock protection)	8			A	
23		12			A	
24		16			A	
25						
30	Aluminium housing U 15 / 14 up to type 6		1700		U	
31	Aluminium housing U 15 / 21 up to type 12		2300		U	
32	Aluminium housing U 15 / 30 up to type 16		2900		U	

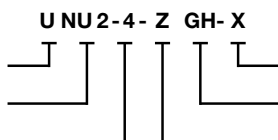


Type	No. of contacts	Dimension A	Dimension C
2	2	50	75
4	4	75	100
6	6	100	125
8	8	125	150
10	10	152	177
12	12	177	202
14	14	202	227
16	16	227	252

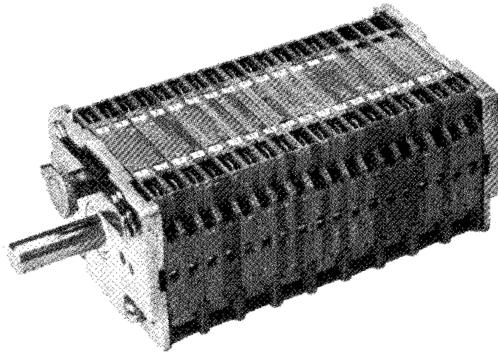
U 15 / ..	Dimension E	Dimension F	Dimension G
/14	160	130	169
/21	230	200	239
/30	320	290	329



Example for type-sign
Aluminium housing
Signal-cam controller
No. of contacts



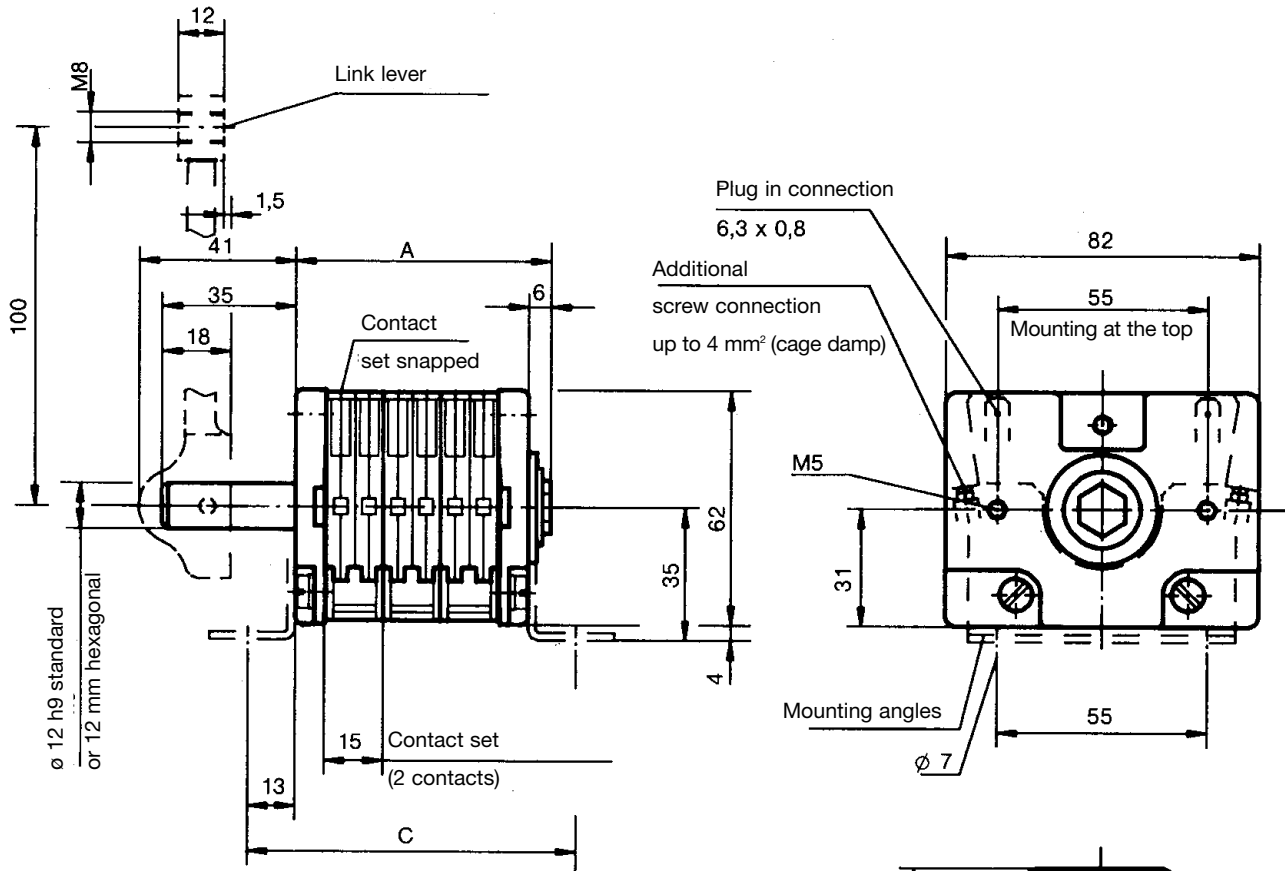
Special please to describe
Link rod
Spring return



The cam controller NU 3 is used as a signal and announcement switch in HV systems. This rugged switching device to IEC 947-5-1 EN 60947 DIN VDE 0660-200 and VDE 0670/4 § 20 has cam disk that can be programmed.
The switching rating of the contacts (positively opened and positively closed) is 8 A 250 V AC 15 res. 2,5 A 250 V DC.
Time constant L/R = 20 ms.

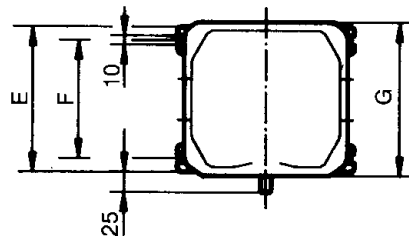
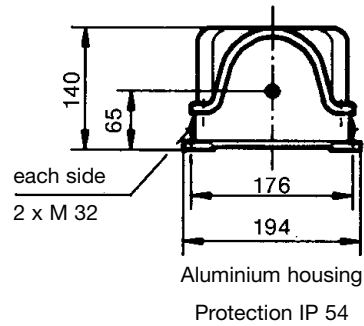
Mechanical life	1 million operating cycles
Permissible ambient temperature	Operation -40° C to +60° C Storage -50° C to +80° C
Climate resistance	DIN IEC 68 part 2-3
Damp heat constant	DIN IEC 68 part 2-30
Damp heat cyclic	DIN IEC 68 part 2-30
Degree of protection (in housing)	IP 54 IEC 529 DIN 40050
Technical data look catalog 5/100	

Pos.			Weight gramm	Part No.	Type	Price EURO
1	Signal-cam controller	No. of contacts 2	450		01	
2	with free shaftend 12 mm ø standard	4	600		02	
3	or 12 mm hexagonal	6	750		03	
4	Contacts with connector lugs	8	900		04	
5	Switching program to your	10	1050		05	
6	contact-arrangement	12	1200		06	
7		14	1350		07	
8		16	1500		08	
9		18	1650		09	
10		20	1800		10	
11		22	1950		11	
12		24	2100		12	
13		26	2250		13	
14		28	2400		14	
15		30	2550		15	
16		32	2700		16	
20	Contacts with additional screw connection each	2				
21	Second free shaftend 12 mm ø standard or 12 mm hexagonal				F	
22	Spring return in 0-position		110		Z	
23	Switching sequence 4-0-4					
24	Mounting angles 2 pieces each signal-cam controller		80		W	
25	Link lever for shaft 12 mm ø standard or 12 mm hexagonal		70		GH	
30	Aluminium housing U 15 / 14 up to type 6		1700		U	
31	Aluminium housing U 15 / 21 up to type 12		2300		U	
32	Aluminium housing U 15 / 30 up to type 16		2900		U	



Type	No. of contacts	Dimension A	Dimension C
01	2	37	57
02	4	52	72
03	6	67	87
04	8	82	102
05	10	97	117
06	12	112	132
07	14	127	147
08	16	142	162
09	18	157	177
10	20	172	192
11	22	187	207
12	24	202	222
13	26	217	237
14	28	232	252
15	30	247	267
16	32	262	282

U 15 / ..	Dimension E	Dimension F	Dimension G
/14	160	130	169
/21	230	200	239
/30	320	290	329

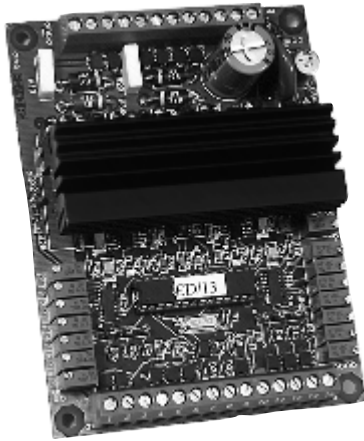


Example for type-sign
Signal-cam controller
No. of contacts
Second free shaftend

NU 3-04- F W GH- X



Special please to describe
Link rod
Mounting angles



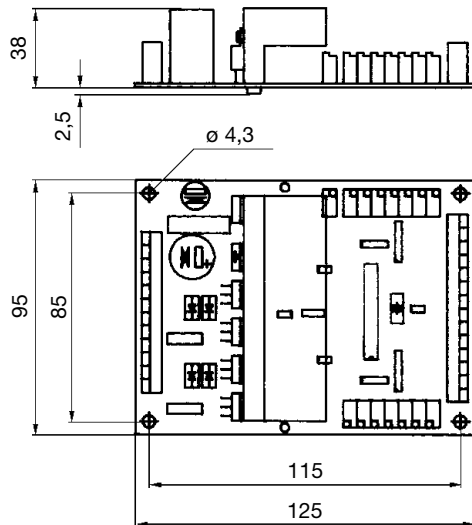
The electronic control unit ES / 43 serves for control of proportional valves without position control.

Features:

- Stabilized voltage
- Chopper output stage with adjustable frequency
- Ramp time setting ON / OFF delay
- Creep speed circuit adjustable
- Solenoid current setting separate for minimum current and maximum current
- Output current controlled independently of temperature and solenoid
- Power output short-circuit-proof with overload protection
- Voltage input protected against polarity reversal
- Mechanical selection of direction by means of contacts
- Actuation of 4 proportional valves solenoid connections drawing ES / 43-10
- Actuation of 2 proportional valves solenoid connections drawing ES / 43-11
- LED operating voltage and working display
- Microprocessor technology therefore especially adaptable

Characteristics:

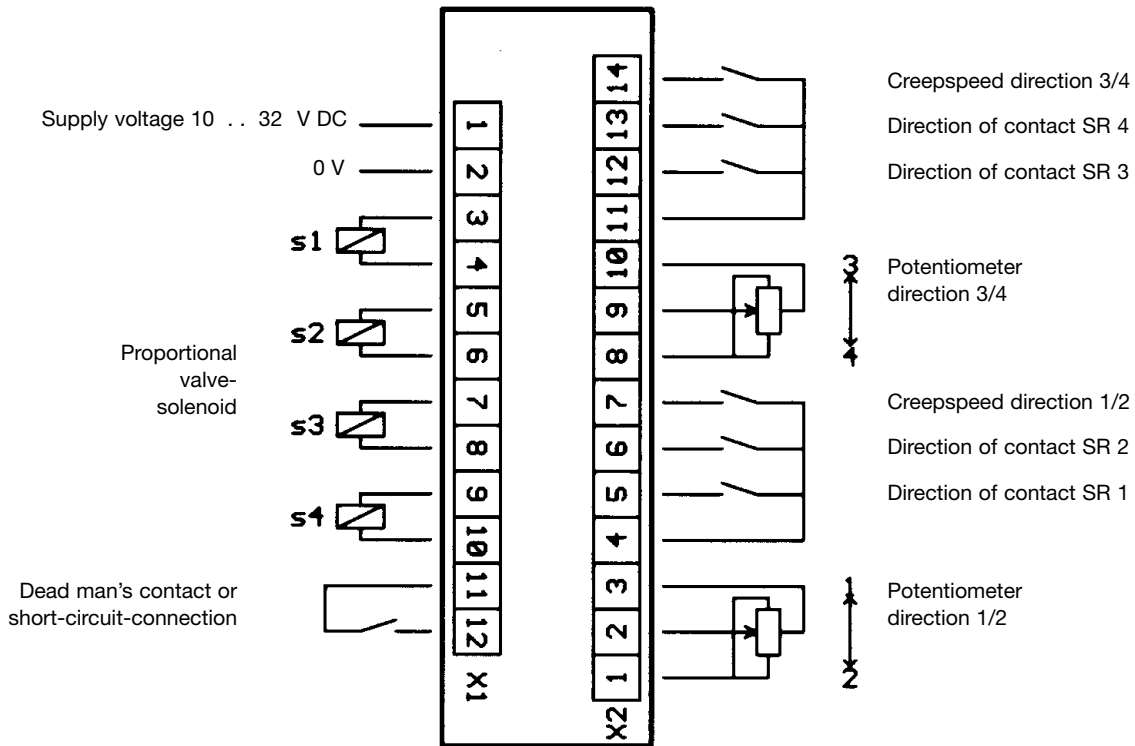
- Supply voltage 10 ... 32 V DC
- Residual ripple 20%
- Control voltage range Ue 0 ... 5 V
- Control current Ie < 1 mA
- Dither frequency f 25 ... 250 Hz
- Proportional valve S 1-4 Output I min. 0 ... 1 A
- Output I max. = I min ... 2 A at 12 Volt
- Output I max. = I min ... 1 A at 24 Volt
- Ramp time setting t on 0,2 ... 25 sec
- t off 0,2 ... 25 sec
- Creep speed variable reduction 25 ... 75%
- Operating temperature -20°C to +60°C
- Storage temperature -40°C to +80°C



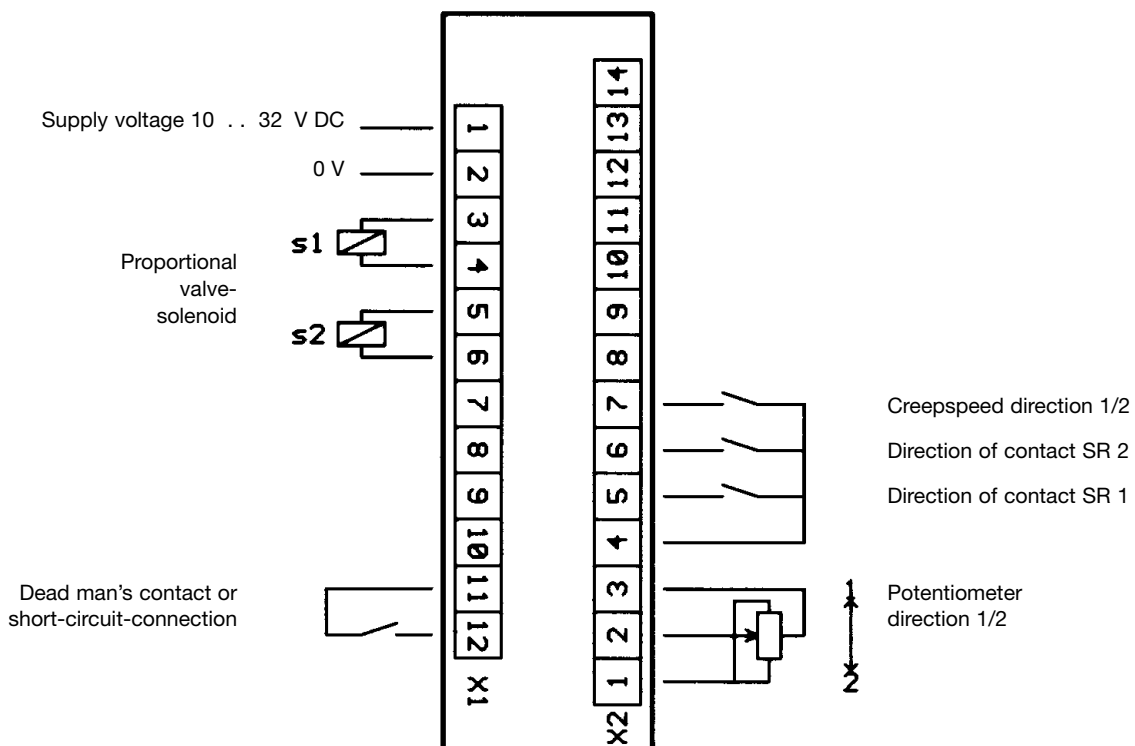
Pos.		Weight gramm	Part No.	Type	Price EURO
1	Electronic control unit for 4 proportional valves solenoid	250		ES/43-10	
2	Electronic control unit for 2 proportional valves solenoid	200		ES/43-11	
3					



ES / 43-10 4 Proportional valves-solenoid



ES / 43-11 2 Proportional valves-solenoid





Pos.	for mounting on: V 10, V 8, VV 8, D 8, P 10, P 11, P 12	Type	Weight gramm	Part No. 52410...	Type	Price EURO
10 11 12	Voltage output impressed 0-10 Volt electronic for 1 axis electronic for 2 axis Technical data: Power supply 18-30 V DC Output 0-10 Volt (+ 5 mA) Output characteristic linear	T 640	150		E01 E02	
20 21 22	Voltage output impressed \pm 10 Volt electronic for 1 axis electronic for 2 axis Technical data: Power supply 18-30 V DC Output \pm 10 Volt (\pm 5 mA) Output characteristic linear	T 641	150		E05 E06	
30 31 32	Output power impressed 0-20 mA electronic for 1 axis electronic for 2 axis Technical data: Power supply 18-30 V DC Output 0-20 mA Output characteristic linear	T 642	150		E10 E11	
40 41 42	Output power impressed 4-20 mA electronic for 1 axis electronic for 2 axis Technical data: Power supply 18-30 V DC Output 4-20 mA Output characteristic linear	T 643	150		E14 E15	
50 51 52	Output power impressed \pm 20 mA electronic for 1 axis electronic for 2 axis Technical data: Power supply 18-30 V DC Output \pm 20 mA Output characteristic linear	T 644	150		E18 E19	
90	Humidity protection (circuit board moulded) for use with high condensation					

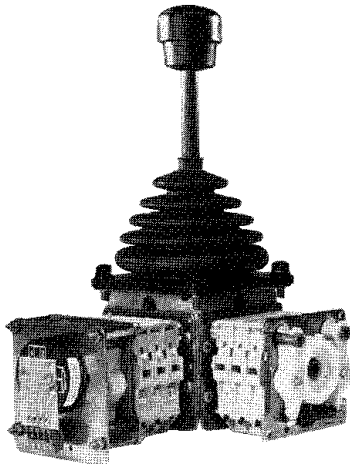


Pos.	for mounting on: V 10, V 8, VV 8, D 8, P 10, P 11, P 12	Type	Weight gramm	Part No. 52410...	Type	Price EURO
1	<p>Electronic Profi-Bus</p> <p>Technical data: Power supply 18-30 V DC distinctively poled</p> <p>Profi-Bus Baud rate max. 12 MBit/s</p> <p>Address outside adjustable 0...99 by rotary switch (default 99)</p> <p>potentiometer output value 0 / 128 / 255 or 255 / 0 / 255</p> <p>Input 3 analog ports for 3 potentiometers (3-axis)</p> <p>6 digital ports for 3 x 2 direction-contacts</p> <p>8 digital ports for 8 switches</p> <p>Connection D-SUB 9 socket (female insert)</p> <p>3 B-line</p> <p>4 RTS</p> <p>5 GND</p> <p>6 +5 V</p> <p>8 A-line</p> <p>Connection cable 2-pole</p> <p>1 24 V</p> <p>2 0 V</p> <p>Communication Profi-Bus DP (DIN 192 45 section 3)</p> <p>Ident-No. 068 BH</p>	T 645	150		E30	
90	Humidity protection (circuit board moulded) for use with high condensation					



Pos.	for mounting on: V 10, V 8, VV 8, D 8, P 10, P 11, P 12	Type	Weight gramm	Part No. 52410...	Type	Price EURO
1	<p>Electronic CAN-Bus</p> <p>Technical data: Power supply 9-36 V DC distinctively poled</p> <p>CAN-Bus level: physical layer acc. ISO 11898</p> <p>Baud rate 125 kBit/s...1Mbit/s</p> <p>Bus-exclusion DIP switch hook up</p> <p>Identifier / CAN-open-ID adjustable by DIP switch</p> <p>Input 4 analog ports for 4 potentiometer (4-axis)</p> <p>8 digital ports for 4 x 2 direction-contacts</p> <p>8 digital ports for 8 switches</p> <p>Connection D-SUB 9 socket protection IP 65 (male)</p> <p>2 CAN-L in</p> <p>3 GND</p> <p>7 CAN-H in</p> <p>9 Supply voltage</p> <p>Connection D-SUB 9 socket protection IP 65 (female)</p> <p>2 CAN-L out</p> <p>3 GND</p> <p>7 CAN-H out</p> <p>9 Supply voltage</p> <p>Protocol CAN-Open according to C/ADS 301 or customer preference</p> <p>Parameters or configurations will be stored in existing EEPROM</p>	T 646	150		E40	
90	Humidity protection (circuit board moulded) for use with high condensation					



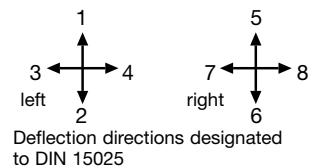


The spindle block Pos. 1-5 incorporates an internal gearing, control-handle with knob solid, bellows, frontplate and prepared for mounting the master switch.

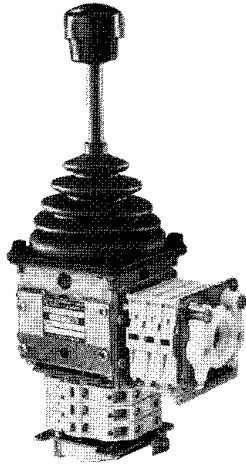
The master switch Pos. 30-36 incorporates a cam shaft, cam disks and contacts completely mounted together.

By all spare part orders it is necessary to inform us about the Work-No. (7 characters) on the switch gear.

Spindle block with schematic representation of the master controller installation and deflection directions. Version shown for left-hand side installation (right-hand side installation is mirror image).



Pos.	V 61	V 61.1	V 62	V 64	V 64.1	Drawing No.	Weight gramm	Part No. 51009...	Type	Price EURO
1						KHG/01	960	...00002	V 61	
2						KHG/04	980	...00003	V 61.1	
3						KHG/01	900	...00004	V 62	
4						KHG/06	1010	...00005	V 64	
5						KHG/06	960	...00006	V 64.1	
9	Gate open-shaped		(for open shifting)			KBKQ ...	60	...00007		
10	Gate cross-shaped		(prohibits diagonal shifting)			KBKR ...	60	...00008	P	
11	Gate special-shaped		(for e. H-gate)			KBKT ...	60	...00009	P	
12	Spring return in 0-position		(for each direction)			KMFD/52	110	...00010	Z	
13	Friction brake adjustable		(for each direction)			KMI/15	30	...00011	R	
20	Control-handle with knob solid with joint					KHG/08	50	...00012		
21	Control-handle with latch for mechanical zero interlock with joint					KHG/14	50	...00013	M	
22	Control-handle with dead man's button (mechanical parts) with joint					KHG/16	100	...00014	T	
23	Control-handle with signal button (mechanical parts) with joint					KHG/12	100	...00015	H	
24	Control-handle with push button (mechanical parts) with joint					KHG/10	110	...00016	D	
25	Control-handle with flat push button (mechanical parts) with joint					KBAD/324	110	...00017	DV	
26	Control-handle with palm grip B 1 with joint						40	...00018	B 1	
27	Control-handle with palm grip B 1 with push button top (mechanical parts) with joint					KHG/20	60	...00019	B 1T	
28	Control-handle long or short 200, 160 mm							...00020		
29	More knobs, grips and T-grips with and without signal devices look catalog 1/228...									
30	Master switch switching sequence 4-0-4					KNK/01				
31						No. of contacts 2	290	...00021	01	
32	Direction 1-2 and 3-4 each master switch					4	350	...00022	02	
33	Switching program according contact-arrangement MS look catalog 5/001 or to your contact-arrangement					6	410	...00023	03	
34						8	470	...00024	04	
35						10	530	...00025	05	
36	Switching sequence 5-0-5 or 6-0-6					12	590	...00026	06	
41	Prepared for mounting potentiometer shaft 6 mm adjusting angle 2 x 150°					KNK/05		...00029	(P)	
42	Prepared for mounting potentiometer e.t.c. adjusting angle variable							...00030	(P)	
43	More potentiometer e.t.c. look catalog 1/240...									
80	Bellows					KMD 66		...00032		
81	Front plate with 4 screws M5 x 15 (for mounting the bellows)					KGIC 185		...00033		
82								...00034		
83	Gasket cap (for push button Pos. 24)							...00035		
84	Knob solid (for Pos. 20)					KBAD 66		...00036		
85	Knob-type with shaft activities (for Pos. 21-25, 1 Pos. only)							...00037		
86	Joint bracket (for Pos. 20-27)					KBG 270		...00038		
87	Notching (2 notching lever with roll, 1 notching spring, 1 notching disk)					KNK/81		...00039		
88	Cam disk without contact-arrangement					KBUC 63		...00040		
89	Cam disk with contact-arrangement					KBUC 63		...00041		
90	Contact set with 2 contacts 2 A 250 V AC 15					KEA/33		...00042		
91	Contact set with 2 contacts 4 A 250 V AC 15					KEA/44		...00043		
92	Microswitch (164) 2 A 250 V AC 15 with fixings and contact striker (for Pos. 22, 23, 24, 27)					KEM/18				

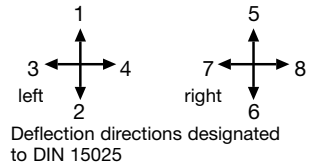


The spindle block Pos. 1-5 incorporates an internal gearing, control-handle with knob solid, bellow, frontplate and prepared for mounting the master switch.

The master switch Pos. 30-36 incorporates a cam shaft, cam disks and contacts completely mounted together.

By all spare part orders it is necessary to inform us about the Work-No. (7 characters) on the switch gear.

Spindle block with schematic representation of the master controller installation and deflection directions.
Version shown for left-hand side installation (right-hand side installation is mirror image).



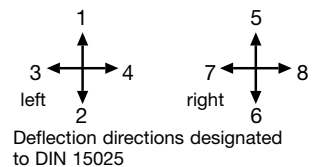
Pos.	VV 61	VV 61.1	VV 62	VV 64	VV 64.1	Drawing No.	Weight gramm	Part No. 51029...	Type	Price EURO	
1						KHG/01	960	...00002	VV 61		
2						KHG/04	980	...00003	VV 61.1		
3						KHG/01	900	...00004	VV 62		
4						KHG/06	1010	...00005	VV 64		
5						KHG/06	960	...00006	VV 64.1		
9	Gate open-shaped (for open shifting)					KBKQ ...	60	...00007			
10	Gate cross-shaped (prohibits diagonal shifting)					KBKR ...	60	...00008	P		
11	Gate special-shaped (for e. H-gate)					KBKT ...	60	...00009	P		
12	Spring return in 0-position (for each direction)					KMFD/52	110	...00010	Z		
13	Friction brake adjustable (for each direction)					KMI/15	30	...00011	R		
20	Control-handle with knob solid with joint					KHG/08	50	...00012			
21	Control-handle with latch for mechanical zero interlock with joint					KHG/14	50	...00013	M		
22	Control-handle with dead man's button (mechanical parts) with joint					KHG/16	100	...00014	T		
23	Control-handle with signal button (mechanical parts) with joint					KHG/12	100	...00015	H		
24	Control-handle with push button (mechanical parts) with joint					KHG/10	110	...00016	D		
25	Control-handle with flat push button (mechanical parts) with joint					KHG/169	110	...00017	DV		
26	Control-handle with palm grip B 1 with joint						40	...00018	B 1		
27	Control-handle with palm grip B 1 with push button top (mechanical parts) with joint					KHG/20	60	...00019	B 1T		
28	Control-handle long or short 200, 160 mm							...00020			
29	More knobs, grips and T-grips with and without signal devices look catalog 1/228...										
30	Master switch switching sequence 4-0-4					KNK/01					
31						No. of contacts	2	290	...00021	01	
32	Direction 1-2 and 3-4 each master switch						4	350	...00022	02	
33	Switching program according contact-arrangement MS look catalog 5/001 or to your contact-arrangement						6	410	...00023	03	
34							8	470	...00024	04	
35							10	530	...00025	05	
35							12	590	...00026	06	
36	Switching sequence 5-0-5 or 6-0-6								...00027		
41	Prepared for mounting potentiometer shaft 6 mm adjusting angle 2 x 150°					KNK/05			...00028	(P)	
42	Prepared for mounting potentiometer e.t.c. adjusting angle variable								...00029	(P)	
43	More potentiometer e.t.c. look catalog 1/240...										
80	Bellows					KMD 66			...00030		
81	Front plate with 4 screws M5 x 15 (for mounting the bellow)					KGIC 185			...00031		
82											
83	Gasket cap (for push button Pos. 24)								...00032		
84	Knob solid (for Pos. 20)					KBAD 66			...00033		
85	Knob-type with shaft activities (for Pos. 21-25, 1 Pos. only)								...00034		
86	Joint bracket (for Pos. 20-27)					KBG 277			...00035		
87	Notching (2 notching lever with roll, 1 notching spring, 1 notching disk)					KNK/81			...00036		
88	Cam disk without contact-arrangement					KBUC 63			...00037		
89	Cam disk with contact-arrangement					KBUC 63			...00038		
90	Contact set with 2 contacts 2 A 250 V AC 15					KEA/33			...00039		
91	Contact set with 2 contacts 4 A 250 V AC 15					KEA/44			...00040		
92	Microswitch (164) 2 A 250 V AC 15 with fixings and contact striker (for Pos. 22, 23, 24, 27)					KEM/18			...00041		



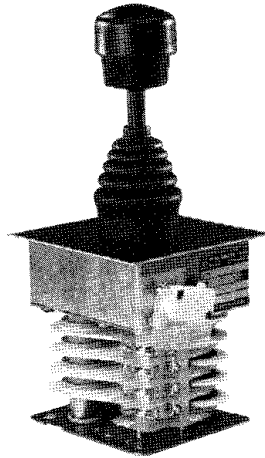
The spindle block Pos. 1, 3 incorporates an internal gearing, control-handle with knob solid, below, frontplate.

By all spare part orders it is necessary to inform us about the Work-No. (7 characters) on the switch gear.

Spindle block with schematic representation of the master controller installation and deflection directions.
Version shown for left-hand side installation (right-hand side installation is mirror image).



Pos.	V 11.1	V 11	Drawing No.	Weight gramm	Part No. 51109...	Type	Price EURO
1			KHN/26	400	...00002	V 11.1	
2							
3			KHN/26	500	...00003	V 11	
4							
5							
9	Gate open-shaped	(for open shifting)	KBKW ...	60	...00004		
10	Gate cross-shaped	(prohibits diagonal shifting)	KBKW ...	60	...00005	P	
11	Gate special-shaped	(for e. H-gate)	KBKW ...	60	...00006	P	
12	Spring return in 0-position (2 spring, 2 bolt)	(for each direction)	KHN/26	25	...00007	Z	
13	Friction brake adjustable	(for each direction)	KMI 4	20	...00008	R	
20	Control-handle with knob solid with joint		KHN/07	50	...00009		
21	Control-handle with latch for mechanical zero interlock with joint		KHN/09	50	...00010	M	
22	Control-handle with dead man's button (mechanical parts) with joint		KHN/11	100	...00011	T	
23	Control-handle with signal button (mechanical parts) with joint		KHN/15	100	...00012	H	
24	Control-handle with push button (mechanical parts) with joint		KHN/13	110	...00013	D	
25	Control-handle with flat push button (mechanical parts) with joint		KHN/49	110	...00014	DV	
26	Control-handle with palm grip B 1 with joint			40	...00015	B 1	
27	Control-handle with palm grip B 1 with push button top (mechanical parts) with joint		KBAD/192	60	...00016	B 1T	
28	Control-handle long or short 140, 100 mm				...00017		
29	More knobs, grips and T-grips with and without signal devices look catalog 1/228...						
41	Prepared for mounting potentiometer shaft 6 mm adjusting angle 2 x 150°		KHN/31		...00018	(P)	
42	Prepared for mounting potentiometer e.t.c. adjusting angle variable				...00019	(P)	
43	More potentiometer e.t.c. look catalog 1/240...						
80	Bellows		KMD 94		...00020		
81	Front plate with 4 screws M 4 x 16 (for mounting the bellow)		KBF 196		...00021		
82							
83	Gasket cap (for push button Pos. 24)				...00022		
84	Knob solid (for Pos. 20)		KBAD 66		...00023		
85	Knob-type with shaft activities (for Pos. 21-25, 1 Pos. only)				...00024		
86	Joint bracket (for Pos. 20-27)		KBG 358		...00025		
87	Notching (2 notching lever with roll, 1 notching spring, 1 notching disk)		KHN/26		...00026		
88	Cam disk without contact-arrangement		KBUC 96		...00027		
89	Cam disk with contact-arrangement		KBUC 96		...00028		
90	Contact set with 2 contacts 2 A 250 V AC 15		KEA/48		...00029		
91	Contact set with 2 contacts 4 A 250 V AC 15		KEA/45		...00030		
92	Microswitch (164) 2 A 250 V AC 15 with fixings and contact striker (for Pos. 22, 23, 24, 27)		KEM/25		...00031		

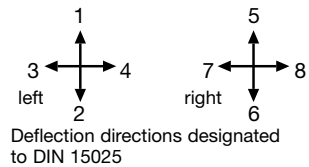


The spindle block Pos. 1, 3 incorporates an internal gearing, control-handle with knob solid, bellow, ring nut and prepared for mounting the master switch.

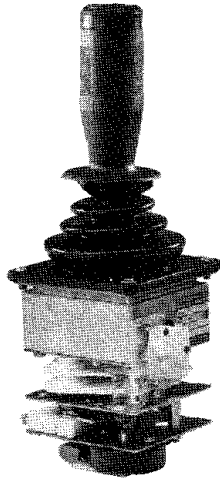
The master switch Pos. 30-36 incorporates a cam shaft, cam disks and contacts completely mounted together.

By all spare part orders it is necessary to inform us about the Work-No. (7 characters) on the switch gear.

Spindle block with schematic representation of the master controller installation and deflection directions.
Version shown for left-hand side installation (right-hand side installation is mirror image).



Pos.	V 51	V 5	Drawing No.	Weight gramm	Part No. 51209...	Type	Price EURO
1			KHE/01	400	...00002	V 51	
2							
3			KHE/01	500	...00003	V 5	
4							
5							
9	Gate open-shaped	(for open shifting)	KBKL ...	50	...00004		
10	Gate cross-shaped	(prohibits diagonal shifting)	KBKK ...	50	...00005	P	
11	Gate special-shaped	(for e. H-gate)	KBKL ...	50	...00006	P	
12	Spring return in 0-position (2 fixing, 2 spring)	(for each direction)		25	...00007	Z	
13	Friction brake adjustable	(for each direction)	KMI/11	30	...00008	R	
20	Control-handle with knob solid with joint		KHE/43	50	...00009		
21	Control-handle with latch for mechanical zero interlock with joint		KHE/34	50	...00010	M	
22	Control-handle with dead man's button (mechanical parts) with joint		KHE/45	50	...00011	T	
23	Control-handle with signal button (mechanical parts) with joint		KHE/46	50	...00012	H	
24	Control-handle with push button (mechanical parts) with joint		KHE/65	60	...00013	D	
25	Control-handle with flat push button (mechanical parts) with joint		KHE/276	60	...00014	DV	
26	Control-handle with palm grip B 5 with joint		KBAD/254	40	...00015	B 5	
27	Control-handle with palm grip B 5 with push button top (mechanical parts) with joints		KBAD/311	60	...00016	B 5T	
28	Control-handle long or short 140, 100 mm				...00017		
29	More knobs, grips and T-grips with and without signal devices look catalog 1/228...						
30	Master switch switching sequence 3-0-3		KHE/92				
31			No. of contacts	1	150	...00018	1
32	Direction 1-2 and 3-4 each master switch (only together deliver)			2	160	...00019	2
33	Switching program according contact-arrangement MS look catalog 5/001			3	170	...00020	3
34	or to your contact-arrangement			4	180	...00021	4
35				5	190	...00022	5
36	Switching sequence 4-0-4			6	200	...00023	6
41	Prepared for mounting potentiometer shaft 6 mm adjusting angle 2 x 150°		KHE/185			...00025	(P)
42	Prepared for mounting potentiometer e.t.c. adjusting angle variable					...00026	(P)
43	More potentiometer e.t.c. look catalog 1/240...						
80	Bellows		KMD 20			...00027	
81	Ring nut (for mounting the bellow)		KMS 3			...00028	
82	Gasket (for spindle block Pos. 1, 3)		KMD 25			...00029	
83	Gasket cap (for push button Pos. 24)					...00030	
84	Knob solid (for Pos. 20)		KBAD 66			...00031	
85	Knob-type with shaft activities (for Pos. 21-25, 1 Pos. only)					...00032	
86	Joint bracket (for Pos. 20-27)		KHE/142			...00033	
87	Notching (1 notching lever with roll, 1 notching spring, 1 notching disk)					...00034	
88	Cam disk without contact-arrangement		KBUC 47			...00035	
89	Cam disk with contact-arrangement		KBUC 47			...00036	
90	Microswitch (MZX1) 2 A 250 V AC 15 with roll-lever and insulating disk (for Pos. 30-35)					...00037	
91	Microswitch (MZX1) 2 A 250 V AC 15 with fixings and contact striker (for Pos. 22, 23, 24, 27)		KEN/05			...00038	

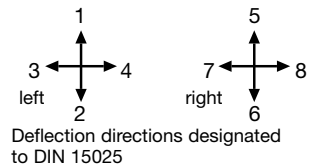


The spindle block Pos. 1, 3 incorporates an internal gearing, control-handle with knob solid, bellow, frontplate and prepared for mounting the master switch.

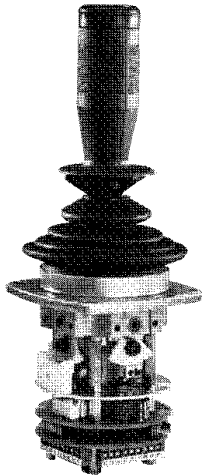
The master switch Pos. 30-36 incorporates a cam shaft, cam disks and contacts completely mounted together.

By all spare part orders it is necessary to inform us about the Work-No. (7 characters) on the switch gear.

Spindle block with schematic representation of the master controller installation and deflection directions.
Version shown for left-hand side installation (right-hand side installation is mirror image).



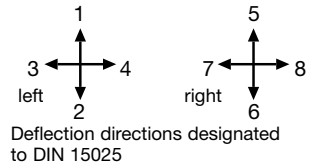
Pos.	VV 51	VV 5	Drawing No.	Weight gramm	Part No. 51209...	Type	Price EURO
1			KHE/145	500	...00002	VV 51	
2							
3			KHE/145	600	...00003	VV 5	
4							
5							
9	Gate open-shaped	(for open shifting)	KBKP ...	60	...00004		
10	Gate cross-shaped	(prohibits diagonal shifting)	KBKP ...	60	...00005	P	
11	Gate special-shaped	(for e. H-gate)	KBKP ...	60	...00006	P	
12	Spring return in 0-position (2 fixing, 2 spring)	(for each direction)		25	...00007	Z	
13	Friction brake adjustable	(for each direction)	KMI/11	30	...00008	R	
20	Control-handle with knob solid with joint		KHE/147	50	...00009		
21	Control-handle with latch for mechanical zero interlock with joint		KHE/155	50	...00010	M	
22	Control-handle with dead man's button (mechanical parts) with joint		KHE/149	100	...00011	T	
23	Control-handle with signal button (mechanical parts) with joint		KHE/151	100	...00012	H	
24	Control-handle with push button (mechanical parts) with joint		KHE/153	110	...00013	D	
25	Control-handle with flat push button (mechanical parts) with joint		KHE/276	110	...00014	DV	
26	Control-handle with palm grip B 1 with joint			40	...00015	B 1	
27	Control-handle with palm grip B 1 with push button top (mechanical parts) with joint		KHE/161	60	...00016	B 1T	
28	Control-handle long or short 140, 100 mm				...00017		
29	More knobs, grips and T-grips with and without signal devices look catalog 1/228...						
30	Master switch switching sequence 3-0-3		KHE/92				
31			No. of contacts 1	150	...00018	1	
32	Direction 1-2 and 3-4 each master switch (only together deliver)		2	160	...00019	2	
33	Switching program according contact-arrangement MS look catalog 5/001 or to your contact-arrangement		3	170	...00020	3	
34			4	180	...00021	4	
35			5	190	...00022	5	
36	Switching sequence 4-0-4		6	200	...00023	6	
					...00024		
41	Prepared for mounting potentiometer shaft 6 mm adjusting angle 2 x 150°		KHE/185		...00025	(P)	
42	Prepared for mounting potentiometer e.t.c. adjusting angle variable				...00026	(P)	
43	More potentiometer e.t.c. look catalog 1/240...						
80	Bellows		KMD 50		...00027		
81	Front plate with 4 screws M 5 x 15 (for mounting the bellow)		KGIC 185		...00028		
82							
83	Gasket cap (for push button Pos. 24)				...00029		
84	Knob solid (for Pos. 20)		KBAD 66		...00030		
85	Knob-type with shaft activities (for Pos. 21-25, 1 Pos. only)				...00031		
86	Joint bracket (for Pos. 20-27)		KHE/142		...00032		
87	Notching (1 notching lever with roll, 1 notching spring, 1 notching disk)				...00033		
88	Cam disk without contact-arrangement		KBUC 47		...00034		
89	Cam disk with contact-arrangement		KBUC 47		...00035		
90	Microswitch (MZX1) 2 A 250 V AC 15 with roll-lever and insulating disk (for Pos. 30-35)				...00036		
91	Microswitch (MZX1) 2 A 250 V AC 15 with fixings and contact striker (for Pos. 22, 23, 24, 27)		KEN/05		...00037		



The spindle block Pos. 1, 3 incorporates an internal gearing, control-handle with knob solid, bellow and boot clamp.

By all spare part orders it is necessary to inform us about the Work-No. (7 characters) on the switch gear.

Spindle block with schematic representation of the master controller installation and deflection directions. Version shown for left-hand side installation (right-hand side installation is mirror image).



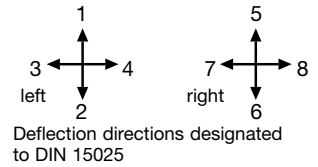
Pos.	V 81	V 8	Drawing No.	Weight gramm	Part No. 51309...	Type	Price EURO
1			KHL/01	800	...00002	V 81	
2							
3			KHL/01	900	...00003	V 8	
4							
5							
9	Gate open-shaped	(for open shifting)	KBKV ...	60	...00004		
10	Gate cross-shaped	(prohibits diagonal shifting)	KBKV ...	60	...00005	P	
11	Gate special-shaped	(for e. H-gate)	KBKV ...	60	...00006	P	
12	Spring return in 0-position (2 spring, 2 bolt)	(for each direction)		30	...00007	Z	
13	Friction brake adjustable	(for each direction)	KMI/21	30	...00008	R	
20	Control-handle with knob solid with joint		KHL/05	50	...00009		
21	Control-handle with latch for mechanical zero interlock with joint		KHL/11	50	...00010	M	
22	Control-handle with dead man's button (mechanical parts) with joint		KHL/13	100	...00011	T	
23	Control-handle with signal button (mechanical parts) with joint		KHL/09	100	...00012	H	
24	Control-handle with push button (mechanical parts) with joint		KHL/07	110	...00013	D	
25	Control-handle with flat push button (mechanical parts) with joint		KHL/202	110	...00014	DV	
26	Control-handle with palm grip B 1 with joint		KHL/25	40	...00015	B 1	
27	Control-handle with palm grip B 1 with push button top (mechanical parts) with joint		KHL/27	60	...00016	B 1 T	
28	Control-handle long or short 180, 140 mm				...00017		
29	More knobs, grips and T-grips with and without signal devices look catalog 1/228...						
43	Potentiometer e.t.c. look catalog 1/240...						
80	Bellows		KMD 90		...00018		
81	Boot clamp				...00019		
82	Gasket (for spindle block Pos. 1,3)		KMD 96		...00020		
83	Gasket cap (for push button Pos. 24)				...00021		
84	Knob solid (for Pos. 20)		KBAD 66		...00022		
85	Knob-type with shaft activities (for Pos. 21-25, 1 Pos. only)				...00023		
86	Joint bracket (for Pos. 20-27)		KBG 282		...00024		
87	Notching (1 notching lever with roll, 1 notching spring, 1 notching disk)				...00025		
88							
89							
90	Microswitch (V4N-GP) 0,5 A 110 V AC 15 (for masterswitch)				...00026		
91	Microswitch (V4N-GP) 0,5 A 110 V AC 15 with contact striker (for Pos. 22, 23, 24, 27)				...00027		



The spindle block Pos. 1, 3 incorporates an internal gearing, control-handle with knob solid, bellow and boot clamp.

By all spare part orders it is necessary to inform us about the Work-No. (7 characters) on the switch gear.

Spindle block with schematic representation of the master controller installation and deflection directions.
Version shown for left-hand side installation (right-hand side installation is mirror image).



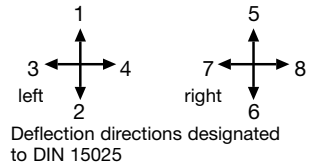
Pos.	VV 81	VV 8	Drawing No.	Weight gramm	Part No. 51329...	Type	Price EURO
1				800	...00002	VV 81	
2							
3				900	...00003	VV 8	
4							
5							
9	Gate open-shaped	(for open shifting)	KBKV ...	60	...00004		
10	Gate cross-shaped	(prohibits diagonal shifting)	KBKV ...	60	...00005	P	
11	Gate special-shaped	(for e. H-gate)	KBKV ...	60	...00006	P	
12	Spring return in 0-position (2 spring, 2 bolt)	(for each direction)		30	...00007	Z	
13	Friction brake adjustable	(for each direction)	KMI/21	30	...00008	R	
20	Control-handle with knob solid with joint		KHL/05	50	...00009		
21	Control-handle with latch for mechanical zero interlock with joint		KHL/11	50	...00010	M	
22	Control-handle with dead man's button (mechanical parts) with joint		KHL/13	100	...00011	T	
23	Control-handle with signal button (mechanical parts) with joint		KHL/09	100	...00012	H	
24	Control-handle with push button (mechanical parts) with joint		KHL/07	110	...00013	D	
25	Control-handle with flat push button (mechanical parts) with joint		KHL/202	110	...00014	DV	
26	Control-handle with palm grip B 1 with joint			40	...00015	B 1	
27	Control-handle with palm grip B 1 with push button top (mechanical parts) with joint		KHL/72	60	...00016	B 1T	
28	Control-handle long or short 180, 140 mm				...00017		
29	More knobs, grips and T-grips with and without signal devices look catalog 1/228...						
43	Potentiometer e.t.c. look catalog 1/240...						
80	Bellows		KMD 90		...00018		
81	Boot clamp				...00019		
82	Gasket (for spindle block Pos. 1, 3)		KMD 96		...00020		
83	Gasket cap (for push button Pos. 24)				...00021		
84	Knob solid (for Pos. 20)		KBAD 66		...00022		
85	Knob-type with shaft activities (for Pos. 21-25, 1 Pos. only)				...00023		
86	Joint bracket (for Pos. 20-27)		KBG 282		...00024		
87	Notching (1 notching lever with roll, 1 notching spring, 1 notching disk)		KHL/57		...00025		
88							
89							
90	Microswitch (V4N-GP) 0,5 A 110 V AC 15 (for masterswitch)				...00026		
91	Microswitch (V4N-GP) 0,5 A 110 V AC 15 with contact striker (for Pos. 22, 23, 24, 27)				...00027		



The spindle block Pos. 1, 3 incorporates an internal gearing, control-handle with knob solid, bellow and front plate.

By all spare part orders it is necessary to inform us about the Work-No. (7 characters) on the switch gear.

Spindle block with schematic representation of the master controller installation and deflection directions. Version shown for left-hand side installation (right-hand side installation is mirror image).



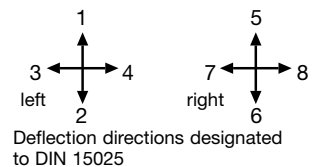
Pos.	V 10.1	V 10	Drawing No.	Weight gramm	Part No. 51409...	Type	Price EURO
1			KHM/03	200	...00002	V 10.1	
2							
3			KHM/03	250	...00003	V 10	
4							
5							
9	Gate open-shaped	(for open shifting)	KBKT ...	20	...00004		
10	Gate cross-shaped	(prohibits diagonal shifting)	KBKT ...	20	...00005	P	
11	Gate special-shaped	(for e. H-gate)	KBKT ...	20	...00006	P	
12	Spring return in 0-position with sliding-pice	(including spindle block)			...00007	Z	
13	Friction brake	(for each direction)	KHM/22		...00008	R	
20	Control-handle with knop solid, joint and chassis cast		KBAD/141	50	...00009		
21	Control-handle with latch for mechanical zero interlock, joint and chassis cast		KBAD/145	50	...00010	M	
22	Control-handle with dead man's button (mechanical parts), joint and chassis cast		KBAD/143	80	...00011	T	
23							
24							
25							
26	Control-handle with palm grip B 5, joint and chassis cast		KBAD/193	40	...00012	B 5	
27	Control-handle with palm grip B 5 with push button top 1 NO, cable, joint and chassis cast		KBAD/194	60	...00013	B 5D	
28							
29	More knobs, grips and T-grips with and without signal devices look catalog 1/228...						
43	Potentiometer e.t.c. look catalog 1/240...						
80	Bellows		KMD 91		...00014		
81	Front plate with 4 screws M 4 x 20 (for mounting the bellow)		KBF 173		...00015		
82	Gasket (for spindle block Pos. 1, 3)		KMD 116		...00016		
83							
84	Knob solid (for Pos. 20)		KBAD /141		...00017		
85	Knob-type with shaft activities (for Pos. 21)				...00018		
86							
87	Notching (1 notching lever with roll, 1 notching spring, 1 notching disk)		KHM/13		...00019		
88	Cam disk without contact-arrangement		KBTG 69		...00020		
89	Cam disk with contact-arrangement		KBTG 69		...00021		
90	Microswitch (V4N-GP) 0,5 A 110 V AC 15 (for masterswitch)				...00022		
91	Microswitch 0,5 A 250 V AC 15 with knob-type and cable (for Pos. 22)				...00023		



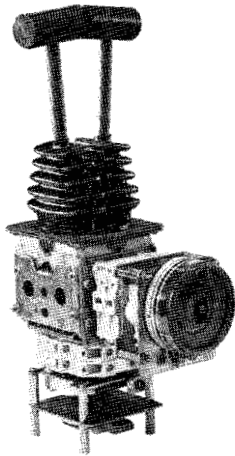
The spindle block Pos. 1, 3 incorporates an internal gearing, control-handle with knob solid, bellows and boot clamp.

By all spare part orders it is necessary to inform us about the Work-No. (7 characters) on the switch gear.

Spindle block with schematic representation of the master controller installation and deflection directions.
Version shown for left-hand side installation (right-hand side installation is mirror image).



Pos.	V 31	V 3	Drawing No.	Weight gramm	Part No. 51509...	Type	Price EURO
1			KHC/180	940	...00001	V 31	
2							
3			KHC/180	1000	...00002	V 3	
4							
5							
9	Gate open-shaped	(for open shifting)	KBKD ...	100	...00003		
10	Gate cross-shaped	(prohibits diagonal shifting)	KBKF ...	100	...00004	P	
11	Gate special-shaped	(for e. H-gate)	KBKG ...	110	...00005	P	
12	Spring return in 0-position	(for each direction)	KMFD/03	110	...00006	Z	
13	Friction brake adjustable	(for each direction)	KMI/09	50	...00007	R	
20	Control-handle with knob solid with joint		KHC/105	50	...00008		
21	Control-handle with latch for mechanical zero interlock with joint		KHC/109	50	...00009	M	
22	Control-handle with dead man's button (mechanical parts) with joint		KHC/106	100	...00010	T	
23	Control-handle with signal button (mechanical parts) with joint		KHC/107	100	...00011	H	
24	Control-handle with push button (mechanical parts) with joint		KHC/138	110	...00012	D	
25	Control-handle with flat push button (mechanical parts) with joint		KHC/225	110	...00013	DV	
26	Control-handle with palm grip B 1 with joint		KHC/190	40	...00014	B 1	
27	Control-handle with palm grip B 1 with push button top (mechanical parts) with joint		KHC/155	60	...00015	B 1T	
28	Control-handle long or short 200, 160 mm				...00016		
29	More knobs, grips and T-grips with and without signal devices look catalog 1/228...						
41	Prepared for mounting potentiometer shaft 6 mm adjusting angle 2 x 150°		KEQ/368		...00017	(P)	
42	Prepared for mounting potentiometer e.t.c. adjusting angle variable				...00018	(P)	
43	More potentiometer e.t.c. look catalog 1/240...						
80	Bellows		KMD 32		...00019		
81	Boot clamp				...00020		
82	Gasket (for spindle block Pos. 1, 3)		KMD 14		...00021		
83	Gasket cap (for push button Pos. 24)				...00022		
84	Knob solid (for Pos. 20)		KBAD 66		...00023		
85	Knob-type with shaft activities (for Pos. 21-25, 1 Pos. only)				...00024		
86	Joint bracket (for Pos. 20-27)		KBB 42		...00025		
87	Notching (1 notching lever with roll, 1 notching spring, 1 notching disk)				...00026		
88	Cam disk without contact-arrangement		KBUA/01		...00027		
89	Cam disk with contact-arrangement		KBUA/01		...00028		
90	Contact (center) 4 A 350 V AC 15		KNB/32		...00029		
91	Contact (end) 4 A 350 V AC 15 with end-plate		KNB/34		...00020		
92	Microswitch (164) 2 A 250 V AC 15 with fixings and contact striker (for Pos. 22, 23, 24, 27)				...00031		

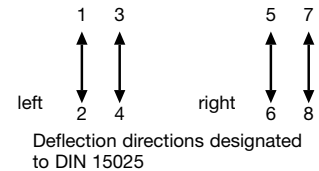


The spindle block Pos. 3-4 incorporates an internal gearing, control-handle with knob solid, bellow, frontplate and prepared for mounting the master switch.

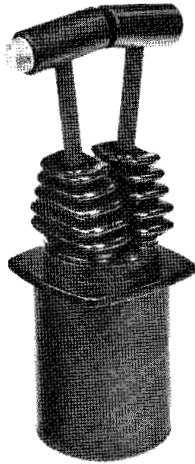
The masterswitch Pos. 30-36 incorporates a cam shaft disks and contacts completely mounted together.

By all spare part orders it is necessary to inform us about the Work-No. (7 characters) on the switch gear.

Spindle block with schematic representation of the master controller installation and deflection directions.
Version shown for left-hand side installation (right-hand side installation is mirror image).



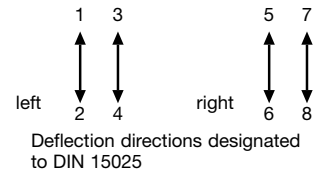
Pos.	D 64	DD 64	Drawing No.	Weight gramm	Part No. 51609...	Type	Price EURO
1							
2							
3			KHE/47	1100	...00002	D 64	
4			KHE/47	1100	...00003	DD 64	
5							
10							
11							
12	Spring return in 0-position	(for each direction)	KMFD/59	110	...00004	Z	
13	Friction brake adjustable	(for each direction)	KMI/15	30	...00005	R	
14							
20	Control-handle with knob solid with joint	(for each direction for Pos. 20-28)	KHG/53	50	...00006		
21	Control-handle with latch for mechanical zero interlock with joint		KHG/59	50	...00007	M	
22	Control-handle with dead man's button (mechanical parts) with joint		KHG/61	100	...00008	T	
23	Control-handle with signal button (mechanical parts) with joint		KHG/57	100	...00009	H	
24	Control-handle with push button (mechanical parts) with joint		KHG/55	110	...00010	D	
25	Control-handle with flat push button (mechanical parts) with joint		KHG/171	110	...00011	DV	
26	Control-handle with T-grip with joint		KHG/49	40	...00012	Q	
27	Control-handle with T-grip, push button side 1 NO, cable and joint		KHG/51	60	...00013	QD	
28	Control-handle long or short 160, 200 mm				...00014		
29							
30	Master switch switching sequence 4-0-4		KNK/01				
31			No. of contacts 2	290	...00015	01	
32	Direction 1-2 and 3-4 each master switch		4	350	...00016	02	
33	Switching program according contact-arrangement MS look catalog 5/001		6	410	...00017	03	
34	or to your contact-arrangement		8	470	...00018	04	
35			10	530	...00019	05	
			12	590	...00020	06	
36	Switching sequence 5-0-5 or 6-0-6				...00021		
41	Prepared for mounting potentiometer shaft 6 mm adjusting angle 2 x 150°		KNK/05		...00022	(P)	
42	Prepared for mounting potentiometer e.t.c. adjusting angle variable				...00023	(P)	
43	More potentiometer e.t.c. look catalog 1/240...						
80	Bellows with boot clamp		KMD 64		...00024		
81	Front plate with 4 screws M 5 x 15 (for mounting the bellow)		KGIC 349		...00025		
82	Gasket (for spindle block Pos. 3, 4)		KMD 86		...00026		
83	Gasket cap (for push button Pos. 24)				...00027		
84	Knob solid (for Pos. 20)		KBAD 66		...00028		
85	Knob-type with shaft activities (for Pos. 21-25, 1 Pos. only)				...00029		
86	T-grip (for Pos. 26)		KBAD 148		...00030		
87	Notching (2 notching lever with roll, 1 notching spring, 1 notching disk)		KNK/81		...00031		
88	Cam disk without contact-arrangement		KBUC 63		...00032		
89	Cam disk with contact-arrangement		KBUC 63		...00033		
90	Contact set with 2 contacts 2 A 250 V AC 15		KEA/33		...00034		
91	Contact set with 2 contacts 4 A 250 V AC 15		KEA/44		...00035		
92	Microswitch (MZX1) 2 A 250 V AC 15 with fixings and contact striker (for Pos. 22, 23, 24)				...00036		
93	T-grip with push button side 1 NO 0,5 A 250 V AC 15 with cable (for Pos. 27)		KBAD 147		...00037		



The spindle block Pos. 3 incorporates an internal gearing, control-handle with knob solid, bellows and boot clamp.

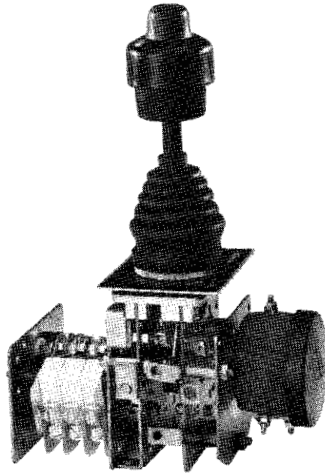
By all spare part orders it is necessary to inform us about the Work-No. (7 characters) on the switch gear.

Spindle block with schematic representation of the master controller installation and deflection directions.
Version shown for left-hand side installation (right-hand side installation is mirror image).



Pos.	D 8	Drawing No.	Weight gramm	Part No. 51629...	Type	Price EURO
1						
2						
3		KHL/37	1000	...00001	D 8	
4						
5						
10	Spring return in 0-position (2 spring, 2 bolt) (for each direction) Friction brake adjustable (for each direction)					
11						
12		30	...00002	Z		
13		30	...00003	R		
14						
20	Control-handle with knob solid with joint (for each direction for Pos. 20-28)	KHL/107	50	...00004		
21	Control-handle with latch for mechanical zero interlock with joint	KHL/109	50	...00005	M	
22	Control-handle with dead man's button (mechanical parts) with joint		100	...00006	T	
23	Control-handle with signal button (mechanical parts) with joint		100	...00007	H	
24	Control-handle with push button (mechanical parts) with joint		110	...00008	D	
25	Control-handle with flat push button (mechanical parts) with joint	KHL/204	110	...00009	DV	
26	Control-handle with T-grip with joint	KHL/49	40	...00010	Q	
27	Control-handle with T-grip, push button side 1 NO, cable and joint	KHL/47	60	...00011	QD	
28	Control-handle long or short 180, 140 mm			...00012		
29						
43	Potentiometer e.t.c. look catalog 1/240...					
80	Bellows with boot clamp	KMD 64		...00013		
81						
82	Gasket (for spindle block Pos. 3)	KMD 96		...00014		
83	Gasket cap (for push button Pos. 24)			...00015		
84	Knob solid (for Pos. 20)	KBAD 66		...00016		
85	Knob-type with shaft activities (for Pos. 21-25, 1 Pos. only)			...00017		
86	T-grip (for Pos. 26)	KBAD 148		...00018		
87	Notching (1 notching lever with roll, 1 notching spring, 1 notching disk)			...00019		
88						
89						
90	Microswitch (V4N-GP) 0,5 A 110 V AC 15 (for masterswitch)			...00020		
91	Microswitch (V4N-GP) 0,5 A 110 V AC 15 with contact striker (for Pos. 22, 23, 24)			...00021		
92	T-grip with push button side 1 NO 0,5 A 250 V AC 15 with cable (for Pos. 27)	KBAD 147		...00022		



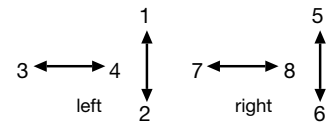


The spindle block Pos. 1 incorporates an internal gearing, control-handle with knob solid, bellow, ring nut and prepared for mounting the master switch.

The master switch Pos. 30-36 incorporates a cam shaft, cam disks and contacts completely mounted together.

By all spare part orders it is necessary to inform us about the Work-No. (7 characters) on the switch gear.

Spindle block with schematic representation of the master controller installation and deflection directions.
Version shown for left-hand side installation (right-hand side installation is mirror image).



Deflection directions designated to DIN 15025

Pos.	S 2	Drawing No.	Weight gramm	Part No. 52009...	Type	Price EURO
1		KHS/165	600	...00001	S 2	
2						
3						
4						
5						
10	Gate special-shaped for position view M. 1699 Spring return in 0-position Friction brake adjustable		60	...00002	P	
11		KMFD/58	20	...00003	Z	
12		KHS/167	20	...00004	R	
13						
14						
20	Control-handle with knob solid with joint Control-handle with latch for mechanical zero interlock with joint Control-handle with dead man's button (mechanical parts) with joint Control-handle with signal button (mechanical parts) with joint Control-handle with push button (mechanical parts) with joint Control-handle with flat push button (mechanical parts) with joint Control-handle with palm grip B 5 with joint Control-handle with palm grip B 5 with push button top (mechanical parts) with joint Control-handle long or short 140, 100 mm More knobs, grips and T-grips with and without signal devices look catalog 1/228...	KHS/118	50	...00005		
21		KHS/122	50	...00006	M	
22		KHS/119	50	...00007	T	
23		KHS/120	50	...00008	H	
24		KHS/177	60	...00009	D	
25		KHS/646	60	...00010	DV	
26		KBAD/254	40	...00011	B 5	
27		KBAD/311	60	...00012	B 5T	
28					...00013	
29						
30	Master switch switching sequence 5-0-5 Direction 1-2 or 3-4 Switching program according contact-arrangement MS look catalog 5/001 or to your contact-arrangement	KHS/49				
31		No. of contacts 3	300	...00014	02	
32		5	330	...00015	03	
33		7	360	...00016	04	
34		9	390	...00017	05	
35						
36						
41	Prepared for mounting potentiometer shaft 6 mm adjusting angle 2 x 150° Prepared for mounting potentiometer e.t.c. adjusting angle variable More potentiometer e.t.c. look catalog 1/240...	KHS/165		...00018	(P)	
42				...00019	(P)	
43						
80	Bellows Ring nut (for mounting the bellow) Gasket (for spindle block Pos. 1) Gasket cap (for push button Pos. 24) Knob solid (for Pos. 20) Knob-type with shaft activities (for Pos. 21-25, 1 Pos. only) Spare gear with bracket (for Pos. 20-27) Notching (2 notching lever with roll, 2 notching spring, 1 notching disk) Microswitch (MZX1) 2 A 250 V AC 15 with roll-lever and insulating disk (for Pos. 31-34) Microswitch (MZX1) 2 A 250 V AC 15 with roll-lever, 2 insulating disks and contact striker (for Pos. 22, 23, 24, 27)	KMD 20		...00020		
81		KMS 463		...00021		
82		KMD 33		...00022		
83				...00023		
84		KBAD 66		...00024		
85				...00025		
86				...00026		
87		KHS/165		...00027		
88						
89						
90				...00028		
91				...00029		

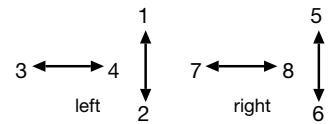


The spindle block Pos. 1 incorporates an internal gearing, control-handle with knob solid, bellow, frontplate and prepared for mounting the master switch.

The master switch Pos. 30-36 incorporates a cam shaft, cam disks and contacts completely mounted together.

By all spare part orders it is necessary to inform us about the Work-No. (7 characters) on the switch gear.

Spindle block with schematic representation of the master controller installation and deflection directions.
Version shown for left-hand side installation (right-hand side installation is mirror image).



Deflection directions designated to DIN 15025

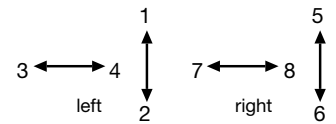
Pos.	S 21	Drawing No.	Weight gramm	Part No. 52029...	Type	Price EURO
1		KHS/204	650	...00001	S 21	
2						
3						
4						
5						
10	Spring return in 0-position	KMFD/58	20	...00002	Z	
11		Friction brake adjustable	KHS/167	20	...00003	R
12						
13						
14						
20	Control-handle with knob solid with joint	KHS/118	50	...00004		
21	Control-handle with latch for mechanical zero interlock with joint	KHS/122	50	...00005	M	
22	Control-handle with dead man's button (mechanical parts) with joint	KHS/119	100	...00006	T	
23	Control-handle with signal button (mechanical parts) with joint	KHS/120	100	...00007	H	
24	Control-handle with push button (mechanical parts) with joint	KHS/177	110	...00008	D	
25	Control-handle with flat push button (mechanical parts) with joint	KHS/646	110	...00009	DV	
26	Control-handle with palm grip B 1 with joint	KBAD/22	40	...00010	B 1	
27	Control-handle with palm grip B 1 with push button top (mechanical parts) with joint	KBAD/65	60	...00011	B 1T	
28	Control-handle long or short 140, 100 mm			...00012		
29	More knobs, grips and T-grips with and without signal devices look catalog 1/228...					
30	Master switch switching sequence 5-0-5	KHS/49				
31		No. of contacts	3	300	...00013	02
32	Direction 1-2 or 3-4		5	330	...00014	03
33	Switching program according contact-arrangement MS look catalog 5/001		7	360	...00015	04
34	or to your contact-arrangement		9	390	...00016	05
35						
36						
41	Prepared for mounting potentiometer shaft 6 mm adjusting angle 2 x 150°	KHS/165		...00017	(P)	
42	Prepared for mounting potentiometer e.t.c. adjusting angle variable			...00018	(P)	
43	More potentiometer e.t.c. look catalog 1/240...					
80	Bellows	KMD 50		...00019		
81	Front plate with 4 screws M5 x 15 (for mounting the bellow)	KGIC 185		...00020		
82						
83	Gasket cap (for push button Pos. 24)			...00021		
84	Knob solid (for Pos. 20)			...00022		
85	Knob-type with shaft activities (for Pos. 21-25, 1 Pos. only)	KBAD 66		...00023		
86	Spare gear with bracket (for Pos. 20-27)			...00024		
87	Notching (2 notching lever with roll, 2 notching spring, 1 notching disk)	KHS/165		...00025		
88						
89						
90	Microswitch (MZX1) 2 A 250 V AC 15 with roll-lever and insulating disk (for Pos. 31-34)			...00026		
91	Microswitch (MZX1) 2 A 250 V AC 15 with roll-lever, 2 insulating disks and contact striker (for Pos. 22, 23, 24, 27)			...00027		



The spindle block Pos. 1 incorporates an internal gearing, control-handle with knob solid, bellow and ring nut.

By all spare part orders it is necessary to inform us about the Work-No. (7 characters) on the switch gear.

Spindle block with schematic representation of the master controller installation and deflection directions.
Version shown for left-hand side installation (right-hand side installation is mirror image).



Deflection directions designated to DIN 15025

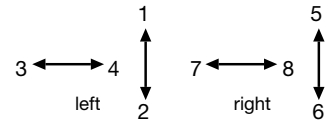
Pos.	S 22	Drawing No.	Weight gramm	Part No. 52049...	Type	Price EURO	
1		KHS/400	600	...00001	S 22		
2							
3							
4							
5							
10	Spring return in 0-position	KMFD/58	20	...00002	Z		
11							
12		Friction brake adjustable	KHS/167	20	...00003	R	
13							
14							
20	Control-handle with knob solid with joint	KHS/118	50	...00004			
21	Control-handle with latch for mechanical zero interlock with joint	KHS/122	50	...00005	M		
22	Control-handle with dead man's button (mechanical parts) with joint	KHS/119	50	...00006	T		
23	Control-handle with signal button (mechanical parts) with joint	KHS/120	50	...00007	H		
24	Control-handle with push button (mechanical parts) with joint	KHS/177	60	...00008	D		
25	Control-handle with flat push button (mechanical parts) with joint	KHS/646	60	...00009	DV		
26	Control-handle with palm grip B 5 with joint	KBAD/254	40	...00010	B 5		
27	Control-handle with palm grip B 5 with push button top (mechanical parts) with joint	KBAD/311	60	...00011	B 5T		
28	Control-handle long or short 140, 100 mm			...00012			
29	More knobs, grips and T-grips with and without signal devices look catalog 1/228...						
41	Prepared for mounting potentiometer shaft 6 mm adjusting angle 2 x 150°	KHS/400		...00013	(P)		
42	Prepared for mounting potentiometer e.t.c. adjusting angle variable			...00014	(P)		
43	More potentiometer e.t.c. look catalog 1/240...						
80	Bellows	KMD 20		...00015			
81	Ring nut (for mounting the bellow)	KMS 463		...00016			
82	Gasket (for spindle block Pos. 1)	KMD 33		...00017			
83	Gasket cap (for push button Pos. 24)			...00018			
84	Knob solid (for Pos. 20)	KBAD 66		...00019			
85	Knob-type with shaft activities (for Pos. 21-25, 1 Pos. only)			...00020			
86	Spare gear with cam shaft (for Pos. 20-27)	KHS/400		...00021			
87	Notching (1 notching lever/notching disk with roll, 1 notching spring)			...00022			
88							
89							
90	Microswitch (MZX1) 2 A 250 V AC 15 with roll-lever and insulating disk (for master switch)			...00023			
91	Microswitch (MZX1) 2 A 250 V AC 15 with roll-lever, 2 insulating disks and contact striker (for Pos. 22, 23, 24, 27)			...00024			



The spindle block Pos. 1 incorporates an internal gearing, control-handle with knob solid, bellow and ring nut.

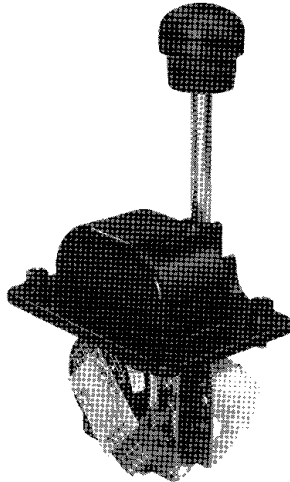
By all spare part orders it is necessary to inform us about the Work-No. (7 characters) on the switch gear.

Spindle block with schematic representation of the master controller installation and deflection directions. Version shown for left-hand side installation (right-hand side installation is mirror image).



Deflection directions designated to DIN 15025

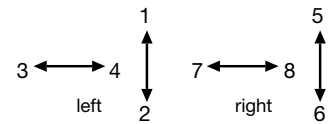
Pos.	SS 22	Drawing No.	Weight gramm	Part No. 52069...	Type	Price EURO
1		KHS/501	600	...00001	SS 22	
2						
3						
4						
5						
10	Spring return in 0-position	KMFD/58	20	...00002	Z	
11		Friction brake adjustable	KHS/167	20	...00003	R
12						
13						
14						
20	Control-handle with knob solid with joint	KHS/507	50	...00004		
21	Control-handle with latch for mechanical zero interlock with joint	KHS/506	50	...00005	M	
22	Control-handle with dead man's button (mechanical parts) with joint	KHS/508	100	...00006	T	
23	Control-handle with signal button (mechanical parts) with joint	KHS/505	100	...00007	H	
24	Control-handle with push button (mechanical parts) with joint	KHS/504	110	...00008	D	
25	Control-handle with flat push button (mechanical parts) with joint	KHS/646	110	...00009	DV	
26	Control-handle with palm grip B 5 with joint	KBAD/254	40	...00010	B 5	
27	Control-handle with palm grip B 5 with push button top (mechanical parts) with joint	KBAD/311	60	...00011	B 5T	
28	Control-handle long or short 140, 100 mm			...00012		
29	More knobs, grips and T-grips with and without signal devices look catalog 1/228...					
41	Prepared for mounting potentiometer shaft 6 mm adjusting angle 2 x 150°	KHS/400		...00013	(P)	
42	Prepared for mounting potentiometer e.t.c. adjusting angle variable			...00014	(P)	
43	More potentiometer e.t.c. look catalog 1/240...					
80	Bellows	KMD 20		...00015		
81	Ring nut (for mounting the bellow)	KMS 463		...00016		
82	Gasket (for spindle block Pos. 1)	KMD 33		...00017		
83	Gasket cap (for push button Pos. 24)			...00018		
84	Knob solid (for Pos. 20)	KBAD 66		...00019		
85	Knob-type with shaft activities (for Pos. 21-25, 1 Pos. only)			...00020		
86	Spare gear with cam shaft (for Pos. 20-27)	KHS/400		...00021		
87	Notching (1 notching lever/notching disk with roll, 1 notching spring)			...00022		
88						
89						
90	Microswitch (MZX1) 2 A 250 V AC 15 with roll-lever and insulating disk (for master switch)			...00023		
91	Microswitch (MZX1) 2 A 250 V AC 15 with roll-lever, 2 insulating disks and contact striker (for Pos. 22, 23, 24, 27)			...00024		



The spindle block Pos. 1 incorporates an internal gearing, control-handle with knob solid, bellow and ring nut.

By all spare part orders it is necessary to inform us about the Work-No. (7 characters) on the switch gear.

Spindle block with schematic representation of the master controller installation and deflection directions.
Version shown for left-hand side installation (right-hand side installation is mirror image).



Deflection directions designated to DIN 15025

Pos.	S 23	Drawing No.	Weight gramm	Part No. 52089...	Type	Price EURO	
1		KHS/481	700	...00001	S 23		
2							
3							
4							
5							
10	Spring return in 0-position	KMFD/58	20	...00002	Z		
11							
12		Friction brake adjustable	KHS/167	20	...00003	R	
13							
14							
20	Control-handle with knob solid	KHS/486	50	...00004	M		
21	Control-handle with latch for mechanical zero interlock	KHS/ ...	50	...00005			
22							
23							
24	Control-handle with push button 1 NO with cable	KHS/ ...	50	...00006	D		
25							
26	Control-handle with T-grip	KHS/487	40	...00007	Q		
27							
28	Control-handle long or short 160, 120 mm			...00008			
29							
41	Prepared for mounting potentiometer shaft 6 mm adjusting angle 2 x 150°	KHS/400		...00009	(P)		
42	Prepared for mounting potentiometer e.t.c. adjusting angle variable			...00010	(P)		
43	More potentiometer e.t.c. look catalog 1/240...						
80							
81							
82	Gasket (for spindle block Pos. 1)	KMD 26		...00011			
83	Gasket cap (for push button Pos. 24)			...00012			
84	Knob solid (for Pos. 20)	KBAD 66		...00013			
85	Knob-type with push button 1 NO with cable (for Pos. 24)			...00014			
86	Spare gear with cam shaft (for Pos. 20-27)	KHS/400		...00015			
87	Notching (1 notching lever/notching disk with roll, 1 notching spring)			...00016			
88	Gear joint (for Pos. 86)	KMZD 155		...00017			
89							
90	Microswitch (MZX1) 2 A 250 V AC 15 with roll-lever and insulating disk (for master switch)			...00018			
91							

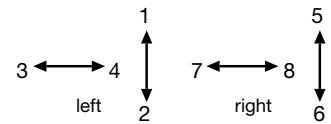


The spindle block Pos. 1 incorporates an internal gearing, control-handle with knob solid and prepared for mounting the master switch.

The master switch Pos. 30-36 incorporates a cam shaft, cam disks and contacts completely mounted together.

By all spare part orders it is necessary to inform us about the Work-No. (7 characters) on the switch gear.

Spindle block with schematic representation of the master controller installation and deflection directions.
Version shown for left-hand side installation (right-hand side installation is mirror image).



Deflection directions designated to DIN 15025

Pos.	S 6	Drawing No.	Weight gramm	Part No. 52169...	Type	Price EURO					
1		KHS/442	960	...00001	S 6						
2											
3											
4											
5											
10	Spring return in 0-position	KMFD/38	110	...00002	Z						
11											
12							Friction brake adjustable	KMI/15	30	...00003	R
13											
14											
20	Control-handle with knob solid	KHS/442	100	...00004							
21	Control-handle with push button 1 NO with cable	KBAD/59	110	...00005	D						
22											
23											
24											
25											
26							Control-handle with palm grip B 1	KHS/442	40	...00006	B 1
27							Control-handle with palm grip B 1 with push button top	KHS/442	60	...00007	B 1D
28							Control-handle long or short 265, 225 mm			...00008	
29											
30	Master switch switching sequence 4-0-4	KNK/01									
31		No. of contacts 2	290	...00009	01						
32	Direction 1-2 or 3-4		4	350	...00010	02					
33	Switching program according contact-arrangement MS look catalog 5/001		6	410	...00011	03					
34	or to your contact-arrangement		8	470	...00012	04					
35			10	530	...00013	05					
36	Switching sequence 5-0-5 or 6-0-6		12	590	...00014	06					
36				...00015							
41	Prepared for mounting potentiometer shaft 6 mm adjusting angle 2 x 150°	KNK/05		...00016	(P)						
42	Prepared for mounting potentiometer e.t.c. adjusting angle variable			...00017	(P)						
43	More potentiometer e.t.c. look catalog 1/240...										
80	Gasket (for spindle block Pos.1)	KBAD 66									
81											
82							Gasket cap (for push button Pos. 24)	...00018			
83							Knob solid (for Pos. 20)	...00019			
84							Knob-type with push button 1 NO with cable (for Pos. 24)	...00020			
85							KBAD/59	...00021			
86											
87							Notching (2 notching lever with roll, 1 notching spring, 1 notching disk)	KNK/81	...00022		
88							Cam disk without contact-arrangement	KBUC 63	...00023		
89							Cam disk with contact-arrangement	KBUC 63	...00024		
90							Contact set with 2 contacts 2 A 250 V AC 15	KEA/33	...00025		
91	Contact set with 2 contacts 4 A 250 V AC 15	KEA/44	...00026								

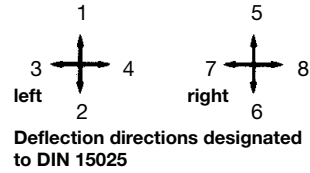
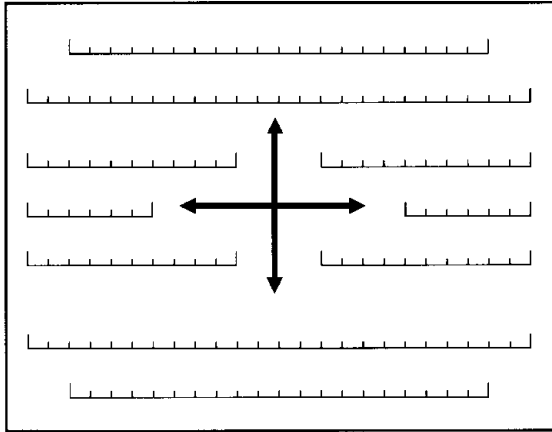


Pos.	Type	Type	Pos.	Type	Type
01	MS 11	A01	12	MS 214	A12
02	MS 12	A02			
03	MS 13	A03			
04	MS 14	A04			
05	MS 21	A05	13	MS 224	A13
06	MS 22	A06			
07	MS 212	A07			
08	MS 222	A08	14	MS 25	A14
09	MS 23	A09			
10	MS 213	A10			
11	MS 24	A11			
15	MS 26	A15	16	MS 0	A98
17	Contact-arrangement special	A99			
18	Contact in 0-position normally closed (NC)	A...0	<p>Additional code - 0</p>		
19	Contact in 0-position normally open (NO)	A...1	<p>Additional code - 1</p>		
20	Potentiometer MSP				
<p>Contact 5 05 = direction 1/4/5/8</p> <p>Contact 3 03 = direction 2/3/6/7</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>- left</p> <p>1</p> <p>left 2</p> </div> <div style="text-align: center;"> <p>- right</p> <p>5</p> <p>right 6</p> </div> </div> <p>Deflection directions designated to DIN 15025</p>					



Customer _____ Order No. _____

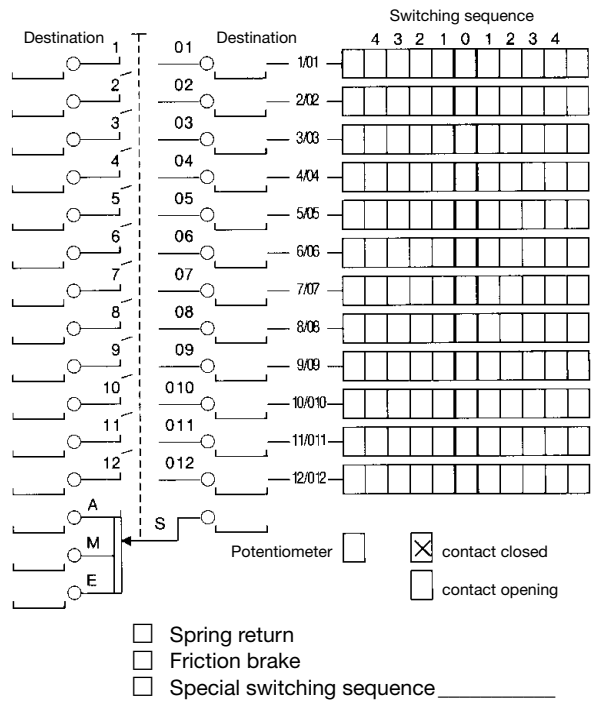
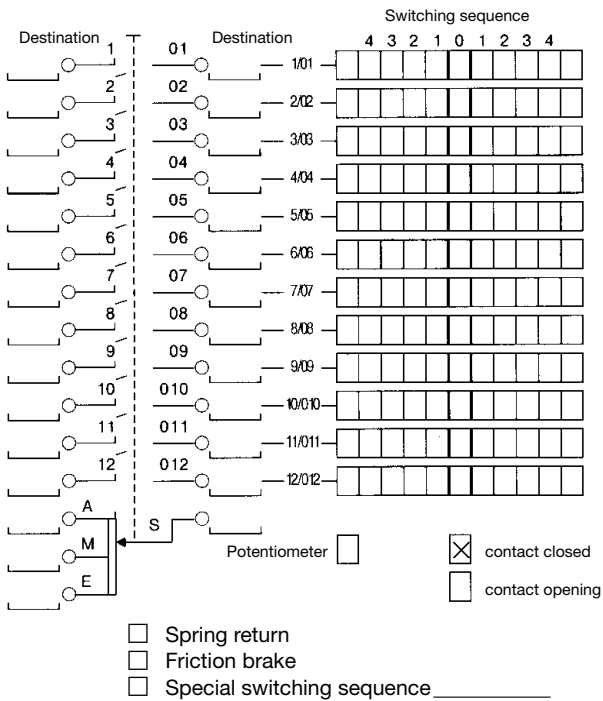
Multi-axis controller
Left / right
Indicating label
Black
Engraved white
Lettering height
3,5 mm



Direction 1-2 / 5-6 _____ Direction 3-4 / 7-8 _____

Switching program _____ Switching program _____

Drive _____ Plant ref. _____ Drive _____ Plant ref. _____



Additional functions in the control-handle _____

Dead man's button T Signal button H Push button D
 Destination _____ Destination _____ Function _____ Destination _____

Control-handle long or short _____ mm _____

Gate cross-shaped Gate special-shaped (enclose drawing)

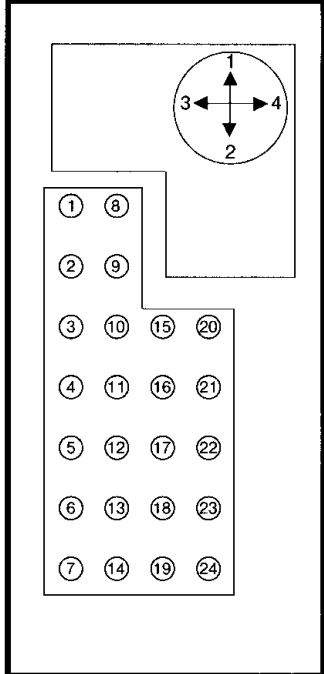
Type key: Type _____

X = _____



Customer _____ Order No. _____

Equipment box left	Position No.	Type	Colour	Label text (max. 2 x 12 characters)	Plant ref.	Destination	Notes
	1	_____	_____	_____	_____	_____	_____
	2	_____	_____	_____	_____	_____	_____
	3	_____	_____	_____	_____	_____	_____
	4	_____	_____	_____	_____	_____	_____
	5	_____	_____	_____	_____	_____	_____
	6	_____	_____	_____	_____	_____	_____
	7	_____	_____	_____	_____	_____	_____
	8	_____	_____	_____	_____	_____	_____
	9	_____	_____	_____	_____	_____	_____
	10	_____	_____	_____	_____	_____	_____
	11	_____	_____	_____	_____	_____	_____
	12	_____	_____	_____	_____	_____	_____
	13	_____	_____	_____	_____	_____	_____
	14	_____	_____	_____	_____	_____	_____
	15	_____	_____	_____	_____	_____	_____
	16	_____	_____	_____	_____	_____	_____
	17	_____	_____	_____	_____	_____	_____
	18	_____	_____	_____	_____	_____	_____
	19	_____	_____	_____	_____	_____	_____
	20	_____	_____	_____	_____	_____	_____
	21	_____	_____	_____	_____	_____	_____
	22	_____	_____	_____	_____	_____	_____
	23	_____	_____	_____	_____	_____	_____
	24	_____	_____	_____	_____	_____	_____
Control unit (look 2/020 ...)							No. of pieces max.
Type							
KST 2/3	1 - 6, 8 - 13, 15 - 18						16
KST 41/181	1 - 5, 10 - 12						8
KST 42/182	1 - 5, 8 - 12, 15 - 17						13
KST 51/151	3 - 7, 10 - 14, 15 - 19, 20 - 24						20
KST 52/54/152/154	1 - 24						24
KST 6	3 - 4, 10 - 11, 15 - 16						6
KST 7	1 - 24						24
KST 75	1 - 19						19



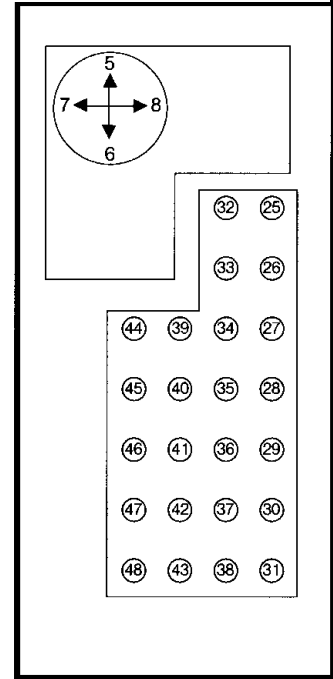
Maximum installation of command and indicating devices 22 (look 1/360) in our control units and housings if our multi-axis controllers V 62 (look 1/100) are used. Additional command and indicating devices can be installed if multi-axis controllers V 64 or V 11 (look 1/110) are used. (please enquire)



Customer _____ Order No. _____

Position No.	Type	Colour	Label text (max. 2 x 12 characters)	Plant ref.	Destination	Notes
25	_____	_____	_____	_____	_____	_____
26	_____	_____	_____	_____	_____	_____
27	_____	_____	_____	_____	_____	_____
28	_____	_____	_____	_____	_____	_____
29	_____	_____	_____	_____	_____	_____
30	_____	_____	_____	_____	_____	_____
31	_____	_____	_____	_____	_____	_____
32	_____	_____	_____	_____	_____	_____
33	_____	_____	_____	_____	_____	_____
34	_____	_____	_____	_____	_____	_____
35	_____	_____	_____	_____	_____	_____
36	_____	_____	_____	_____	_____	_____
37	_____	_____	_____	_____	_____	_____
38	_____	_____	_____	_____	_____	_____
39	_____	_____	_____	_____	_____	_____
40	_____	_____	_____	_____	_____	_____
41	_____	_____	_____	_____	_____	_____
42	_____	_____	_____	_____	_____	_____
43	_____	_____	_____	_____	_____	_____
44	_____	_____	_____	_____	_____	_____
45	_____	_____	_____	_____	_____	_____
46	_____	_____	_____	_____	_____	_____
47	_____	_____	_____	_____	_____	_____
48	_____	_____	_____	_____	_____	_____

Equipment box right

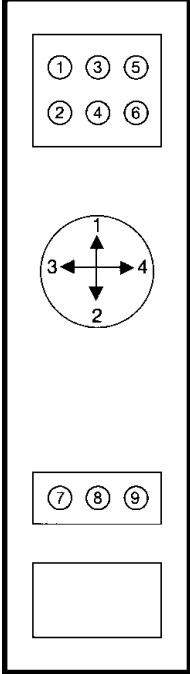


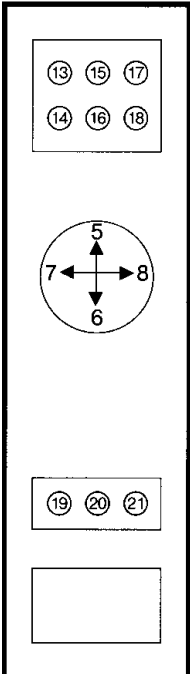
Maximum installation of command and indicating devices 22 (look 1/360) in our control units and housings if our multi-axis controllers V 62 (look 1/100) are used. Additional command and indicating devices can be installed if multi-axis controllers V 64 or V 11 (look 1/110) are used.
(please enquire)

	No. of pieces max.	Control unit (look 2/020 ...)
25 - 30, 32 - 37, 39 - 42	16	Type
25 - 29, 34 - 36	8	KST 2/3
25 - 29, 32 - 36, 39 - 41	13	KST 41/181
27 - 31, 34 - 38, 39 - 43, 44 - 48	20	KST 42/182
25 - 48	24	KST 51/151
27 - 28, 34 - 35, 39 - 40	6	KST 52/54/152/154
25 - 48	24	KST 6
25 - 43	19	KST 7
		KST 75



Customer _____ Order No. _____

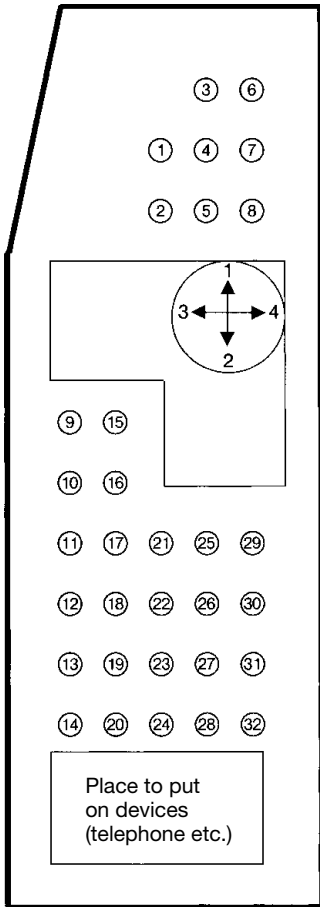
Equipment box left	Position No.	Type	Colour	Label text (max. 2 x 12 characters)	Plant ref.	Destination	Notes
 <p>Max. 6 pcs. installation of command and indicating devices 22 (look 1/360) or 1 pcs. monitoring device 72 x 72 mm</p> <p>Multi-axis controller V 64 (look 1/100) or V 11 (look 1/110)</p> <p>Max. 3 pcs. installation of command and indicating devices 22 (look 1/360)</p> <p>Place to put on devices</p>	1	_____	_____	_____	_____	_____	_____
	2	_____	_____	_____	_____	_____	_____
	3	_____	_____	_____	_____	_____	_____
	4	_____	_____	_____	_____	_____	_____
	5	_____	_____	_____	_____	_____	_____
	6	_____	_____	_____	_____	_____	_____
	7	_____	_____	_____	_____	_____	_____
	8	_____	_____	_____	_____	_____	_____
	9	_____	_____	_____	_____	_____	_____
	10	_____	_____	_____	_____	_____	_____
	11	_____	_____	_____	_____	_____	_____
	12	_____	_____	_____	_____	_____	_____

Equipment box right	Position No.	Type	Colour	Label text (max. 2 x 12 characters)	Plant ref.	Destination	Notes
 <p>Max. 6 pcs. installation of command and indicating devices 22 (look 1/360) or 1 pcs. monitoring device 72 x 72 mm</p> <p>Multi-axis controller V 64 (look 1/100) or V 11 (look 1/110)</p> <p>Max. 3 pcs. installation of command and indicating devices 22 (look 1/360)</p> <p>Place to put on devices</p>	13	_____	_____	_____	_____	_____	_____
	14	_____	_____	_____	_____	_____	_____
	15	_____	_____	_____	_____	_____	_____
	16	_____	_____	_____	_____	_____	_____
	17	_____	_____	_____	_____	_____	_____
	18	_____	_____	_____	_____	_____	_____
	19	_____	_____	_____	_____	_____	_____
	20	_____	_____	_____	_____	_____	_____
	21	_____	_____	_____	_____	_____	_____
	22	_____	_____	_____	_____	_____	_____
	23	_____	_____	_____	_____	_____	_____
	24	_____	_____	_____	_____	_____	_____



Customer _____ Order No. _____

Equipment box left



Position No.	Type	Colour	Label text (max. 2 x 12 characters)	Plant ref.	Destination	Notes
1	_____	_____	_____	_____	_____	_____
2	_____	_____	_____	_____	_____	_____
3	_____	_____	_____	_____	_____	_____
4	_____	_____	_____	_____	_____	_____
5	_____	_____	_____	_____	_____	_____
6	_____	_____	_____	_____	_____	_____
7	_____	_____	_____	_____	_____	_____
8	_____	_____	_____	_____	_____	_____
9	_____	_____	_____	_____	_____	_____
10	_____	_____	_____	_____	_____	_____
11	_____	_____	_____	_____	_____	_____
12	_____	_____	_____	_____	_____	_____
13	_____	_____	_____	_____	_____	_____
14	_____	_____	_____	_____	_____	_____
15	_____	_____	_____	_____	_____	_____
16	_____	_____	_____	_____	_____	_____
17	_____	_____	_____	_____	_____	_____
18	_____	_____	_____	_____	_____	_____
19	_____	_____	_____	_____	_____	_____
20	_____	_____	_____	_____	_____	_____
21	_____	_____	_____	_____	_____	_____
22	_____	_____	_____	_____	_____	_____
23	_____	_____	_____	_____	_____	_____
24	_____	_____	_____	_____	_____	_____
25	_____	_____	_____	_____	_____	_____
26	_____	_____	_____	_____	_____	_____
27	_____	_____	_____	_____	_____	_____
28	_____	_____	_____	_____	_____	_____
29	_____	_____	_____	_____	_____	_____
30	_____	_____	_____	_____	_____	_____
31	_____	_____	_____	_____	_____	_____
32	_____	_____	_____	_____	_____	_____

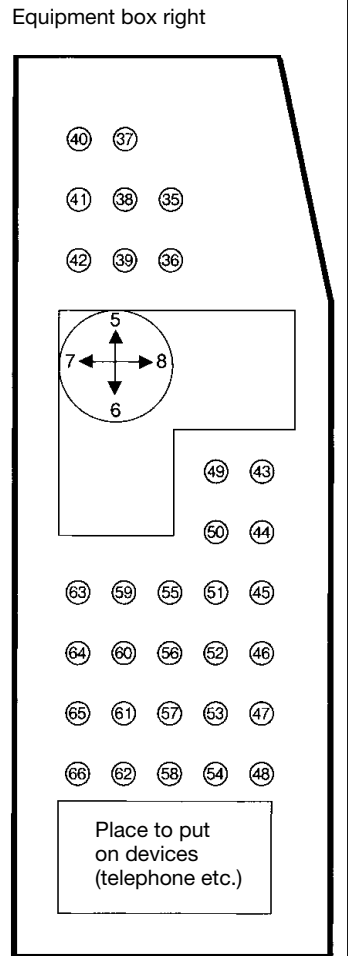
Maximum installation of command and indicating devices 22 (look 1/360) if our multi-axis controllers V 62 (look 1/100) are used.
Additional command and indicating devices can be installed if multi-axis controllers V 64 or V 11 (look 1/110) are used.
(please enquire)

Pos. 1-8 alternative
max. 2 pcs. monitoring
devices 72 x 72 mm



Customer _____ Order No. _____

Position No.	Type	Colour	Label text (max. 2 x 12 characters)	Plant ref.	Destination	Notes
35	_____	_____	_____	_____	_____	_____
36	_____	_____	_____	_____	_____	_____
37	_____	_____	_____	_____	_____	_____
38	_____	_____	_____	_____	_____	_____
39	_____	_____	_____	_____	_____	_____
40	_____	_____	_____	_____	_____	_____
41	_____	_____	_____	_____	_____	_____
42	_____	_____	_____	_____	_____	_____
43	_____	_____	_____	_____	_____	_____
44	_____	_____	_____	_____	_____	_____
45	_____	_____	_____	_____	_____	_____
46	_____	_____	_____	_____	_____	_____
47	_____	_____	_____	_____	_____	_____
48	_____	_____	_____	_____	_____	_____
49	_____	_____	_____	_____	_____	_____
50	_____	_____	_____	_____	_____	_____
51	_____	_____	_____	_____	_____	_____
52	_____	_____	_____	_____	_____	_____
53	_____	_____	_____	_____	_____	_____
54	_____	_____	_____	_____	_____	_____
55	_____	_____	_____	_____	_____	_____
56	_____	_____	_____	_____	_____	_____
57	_____	_____	_____	_____	_____	_____
58	_____	_____	_____	_____	_____	_____
59	_____	_____	_____	_____	_____	_____
60	_____	_____	_____	_____	_____	_____
61	_____	_____	_____	_____	_____	_____
62	_____	_____	_____	_____	_____	_____
63	_____	_____	_____	_____	_____	_____
64	_____	_____	_____	_____	_____	_____
65	_____	_____	_____	_____	_____	_____
66	_____	_____	_____	_____	_____	_____



Maximum installation of command and indicating devices 22 (look 1/360) if our multi-axis controllers V 62 (look 1/100) are used. Additional command and indicating devices can be installed if multi-axis controllers V 64 or V 11 (look 1/110) are used. (please enquire)

Pos. 35-42 alternative max. 2 pcs. monitoring devices 72 x 72 mm



Utilization categories for control switches to IEC 947-5-1 EN 60947 DIN VDE 0660-200.

Type of current	Utilization category	Typical examples of application	Normal conditions of use							
		I = current made, I _c = current broken I _e = rated operational current, U = voltage before make U _e = rated operational voltage U _r = recovery voltage t _{0,95} = time in ms, to reach 95% of the steady-state current. P = U _e · I _e = steady-state power consumption in watts	Make	Break						
			$\frac{I}{I_e}$	$\frac{U}{U_e}$	cos φ	$\frac{I_c}{I_e}$	$\frac{U_r}{U_e}$	cos φ		
AC	AC 12	Control of resistive loads and solid state loads with isolation by opto couplers	1	1	0,9	1	1	0,9		
	AC 15	Control of a.c. electromagnetic loads (> 72 VA)	10	1	0,3	1	1	0,3		
			$\frac{I}{I_e}$	$\frac{U}{U_e}$	t 0,95	$\frac{I_c}{I_e}$	$\frac{U_r}{U_e}$	t 0,95		
DC	DC 12	Control of resistive loads and solid state loads with isolation by opto couplers	1	1	1 ms	1	1	1 ms		
	DC 13	Control of d.c. electromagnets	1	1	6 · P	1	1	6 · P		

The value 6 · P results from an empirical relationship with is found to represent most d.c. magnetic loads to an upper limit of P = 50 W viz 6 · P = 300 ms. Loads having power consumption greater than 50 W are assumed to consist of smaller loads in parallel. Therefore 300 ms is to be an upper limit, irrespective of the power consumption value.

Attach our switching device	V6 N6 S6	VV6 DD 64	V11	V5 S 2-S 23	VV5 SS2-SS21	V8 D 8	VV8 D 3 S 3	V10	V3	dead man's button signal button push button
Rated isolation voltage U _i in Volt	250	250	250	250	250	110	110	110	500	250
Rated operational voltage U _e in Volt	250	250	250	250	250	110	110	110	350	250
Rated operational current I _e in Ampere	6 or 10	6 or 10	6 or 10	6	6	2	2	2	10	6
AC 12	2 4	2 4	2 4	2	2	0,5	0,5	0,5	4	2
Contacts gold-coated	DC 12 24 V	6 8	6 8	6 8	4	4	2	2	8	4
	48 V	2 4	2 4	2 4	2	2	1	1	4	2
	110 V	0,5 1	0,5 1	0,5 1	0,2	0,2	0,1	0,1	1	0,2
	220 V	0,1 0,5	0,1 0,5	0,1 0,5	0,1	0,1	5 mA	5 mA	5 mA	5 mA
DC 13	24 V	1	1	1	3	3	1,5	1,5	1	3
	48 V	0,5	0,5	0,5	1,5	1,5	0,5	0,5	0,5	1,5
	110 V	0,2	0,2	0,2	0,1	0,1	0,05	0,05	0,2	0,1
	220 V	0,05	0,05	0,05	0,05	0,05			0,05	0,05
Short-circuit-protection in Ampere Fuse 9 L	6 10	6 10	6 10	6	6	4	4	4	10	6
Circuit-breaker G-characteristic	6 10	6 10	6 10	6	6	4	4	4	10	6
Terminal screws Plug-in connection	M 3,5	M 3,5	M 3,5	M 3,5 6,3 x 0,8	M 3,5 6,3 x 0,8	Solder terminal			M 4 6,3 x 0,8	M 3,5 6,3 x 0,8
Conductor sizes in mm ² finely stranded with end steeves	1,5	1,5	1,5	1,5	1,5	0,5	0,5	0,5	1,5	1,5
Mechanical life in million (operation cycles) max. switching frequency c/h 1000	10	20	10	6	10	8	12	6	6	10
Mechanical shock resistance to IEC 68-2-27	Shock-amplitude > 15 Shock duration 20 ms									
Clear ances and creepage distances to IEC 947-1; 2.5.46.51	Overvoltage category III pollution grade 3									
Degree of protection to IEC 529 DIN 40050	1. numeral protection of contact and foreign bodies					2. numeral protection of water				
	IP 00 No protection					No protection				
	IP 54 Protection deposits of dust					Protection splashing of water				
	IP 65 Protection complete of dust					Protection hosed of water				
	IP 66 Protection complete of dust					Protection hosed strong of water				



GESSMANN
Industrial controllers

W. Gessmann GmbH
Postfach 11 51
74207 Leingarten
Eppinger Straße 221
74211 Leingarten

Tel. Nat 0 71 31 - 40 67-0
Fax Nat 0 71 31 - 40 67-10
Tel. Int +49 71 31 - 40 67-0
Fax Int +49 71 31 - 40 67-10
E-mail gessmann@gessmann.com
Internet www.gessmann.com

5/900
2005

Representatives Federal Republic of Germany

Klaus Falk Ingenieurbüro
An der Strusbek 8 D
22926 Ahrensburg
Telephone 0 41 02 / 21 13-0
Telefax 0 41 02 / 21 13-10
E-mail info@ikfgmbh.de
Internet www.ikfgmbh.de

Bretzel KG Ing. Büro
Postfach 51 67, 65726 Eschborn
Industriestraße 9, 65760 Eschborn
Telephone 0 61 96 / 40 31 90
Telefax 0 61 96 / 4 30 47
E-mail Kilper@bretzel-gmbh.de
Internet www.bretzel-gmbh.de

Dr.-Ing. Klaus Zimmermann Ingenieurbüro
Automatisierungstechnik
Hauptstraße 15
06493 Neudorf (Harz)
Telephone 03 94 84 / 63 64
Telefax 03 94 84 / 63 19
E-mail ib-zimmermann@gmx.de

Udo Schramm Büro für Elektrotechnik
Benninghofer Straße 284
44267 Dortmund
Telephone 02 31 / 46 40 39
Telefax 02 31 / 4 71 70
E-mail Schramm-Dortmund@t-online.de

Christiani Elektro-Vertriebs-GmbH
Innungstraße 39
50354 Hürth
Telephone 0 22 33 / 3 50 35
Telefax 0 22 33 / 3 61 81
E-mail Vertrieb@Christiani-Gmbh.de

IBA H. Ch. Adlung Ingenieurbüro
Hüttenstraße 16
01979 Lauchhammer
Telephone 0 35 74 / 8 65 53
Telefax 0 35 74 / 8 65 86
E-mail iba-adlung@t-online.de

Representatives foreign country

AE United Arab Emirates
Cavotec Middle East FZE
P.O.Box 61 124
Jebel Ali Free Zone, AA2 & AA3-RA08
Dubai
Telephone +971 488 38 350
Telefax +971 488 38 352
E-mail lars.leksell@cavotec.com
Internet www.cavotec.com

AR Argentina
Cavotec Latin America S.A
Acassuso 548
(1642) San Isidro
Buenos Aires
Telephone +54-11 4743 7049
Telefax +54-11 4743 9914
E-mail andrea.dellabianca@cavotec.com
Internet www.cavotec.com

AU Australia
Cavotec Pty Ltd
28 Mitchell Road, Cardiff 2285
Telephone +61-2 49 / 56 57 88
Telefax +61-2 49 / 56 58 23
E-mail phillip.macridis@cavotec.com
Internet www.cavotec.com

CA Canada
SENETT Control Co. Ltd.
225 Admiral BLVD.
Mississauga Ontario L5T2T3
Telephone +1-9 05 / 5 64 01 67
Telefax +1-9 05 / 5 64 66 33
E-mail sales@senett.ca
Internet www.senett.ca

CH Switzerland
ELVA AG
Werbhollenstrasse 54
4143 Dornach 2
Telephone +41-61 / 7 06 85 90
Telefax +41-61 / 7 06 85 91
E-mail info@elva.ch
Internet www.elva.ch

CN China
Cavotec Shanghai Ltd.
Unit 3, No. 879 ShenFu Road
Xinzhuan Industrial Zone Minhang District
Shanghai 201108
Telephone +86 21 54 42 97 78
Telefax +86 21 34 07 42 55
E-mail phileas@cavotec.com.cn
Internet www.cavotec.com

DK Denmark
Ib Baastrup AS
Dronning Olgas Vej 30
2000 Frederiksberg
Telephone +45-38 / 10 21 29
Telefax +45-38 / 10 29 69
E-mail info@baastrup.com
Internet www.baastrup.com

FI Finland
Kentek Oy
Postbox 18, 01721 Vantaa
Tiilenlyöjänkuja 4, 01721 Vantaa
Telephone +3 58-9 / 8 49 42 00
Telefax +3 58-9 / 84 94 20 59
E-mail kentek@kentek.fi
Internet www.kentek.fi

FR France
Logsys Engineering
8 route d'Altkirch, 68720 Illfurth
Telephone +33-3 / 89 25 54 32
Telefax +33-3 / 89 25 51 32
E-mail rbigenwald@free.fr
Internet www.logsys.net

GB United Kingdom
Cavotec Ltd.
Stirling Way Market Deeping
Lincolnshire PE6 8AS
Telephone +44-17 78 / 34 67 69
Telefax +44-17 78 / 34 18 50
E-mail hans.winemar@cavotec.com
Internet www.cavotec.com

HK Hongkong
Cavotec Hong Kong Ltd
Flat 04C, 17F, Fo Tan Industrial Centre
26-28 Au Pui Wan Street
Fo Tan, Shatin N. T.
Hong Kong
Telephone +852 279 16 161
Telefax +852 279 11 834
E-mail leungg@cavotec.com.hk
Internet www.cavotec.com

IT Italy
S.P.I.I. Società per Azioni
Via Volpi, 37, 21047 Saronno
Telephone +39-02 / 9 62 29 21
Telefax +39-02 / 9 60 96 11
E-mail info@spii.it
Internet www.spii.it

IN India
Arihant Systems P Limited
24/4866 Ansari Road Daryaganj
New Delhi - 110002
Telephone +91-11-23 26 90 11
Telefax +91-11-23 27 35 54
E-mail info@arihantelectricals.com
Internet www.arihantelectricals.com

KR Korea
Tha Kyung Metronics Inc.
RM 1231 LG-ECAT
736-24 YUKSAM-DONG
KANGNAM-KU, Seoul
Telephone +822-568-6534
Telefax +822-568-6535
E-mail thakyung@unitel.co.kr

MX Mexico
ALMESA Alimentaciones Electricas
S.A. DEC.V
KM 117.3
Autopista Mexico Puebla
Puebla, Pue
Telephone +52-222 / 210 50 93
Telefax +52-222 / 210 50 69
E-mail almesa@mexis.com
Internet www.almesa.com.mx

NO Norway
Cavotec Norge, AS
Box 838, 3007 Drammen
Rosenkrantzgt 75, 3018 Drammen
Telephone +47-32 / 26 45 00
Telefax +47-32 / 26 45 10
E-mail info@cavotec.no

NL Netherlands
Albert van der Perk BV
Stolwijkstraat 33, 3079 DN Rotterdam
Telephone +31 10 / 4 22 65 77
Telefax +31 10 / 4 22 20 26
E-mail info@perk-elektrotechniek.nl
Internet www.perk-elektrotechniek.nl

PL Poland
ELEKTRO-TRADING
ul.Mechanikow 9
44-109 Gliwice, Poland
Telephone +48-32 / 734 55 72
Telefax +48-32 / 734 55 70
E-mail et@elektro-trading.com.pl

SE Sweden
Kiepe Elektriska AB
Lodgatan 4, 21124 Malmö
Telephone +46-40 / 29 15 55
Telefax +46-40 / 29 12 31
E-mail kiepe@kiepe.se
Internet www.kiepe.se

SG Singapore
My Port (M) SDN BHD
#04-01/03, 4th Floor, Wisma PTP, Block B
Jalan Pelabuhan Tanjong Pelepas
Gelang Patan 81560

TH Thailand
Johor Darul Takzim

MY Malaysia
Telephone +60-7-50 71 799
Telefax +60-7-50 71 798
E-mail arfah@my-port.net

ID Indonesia
Internet www.my-port.net

TR Turkey
Arda Makina Elektrik
Tic. Ve San, Ltd. Sti,
100, Yil Bulvari
42. Sok. No: 1
Ostim / Ankara
Telephone +90 312 385 80 37 (PBX)
Telefax +90 312 385 80 58
E-mail arda@ardaelektrik.com
Internet www.ardaelektrik.com

US United States
OEM Controls, inc.
10 Controls Drive
Shelton, Conn. 06484
Telephone +1-2 03 / 9 29-84 31
Telefax +1-2 03 / 9 29-38 67
E-mail ksmons@oemcontrols.com
Internet www.oemcontrols.com

Crane masterswitches
Operator's chairs and consoles: Cavotec, inc.
124 Hatfield Road
Statesville, NC 28625
Telephone +1-7 04-8 73-30 09
Telefax +1-7 04-8 73-30 93
E-mail erik.wilhelmsen@cavotec.com
Internet www.cavotec.us

YU Serbia
TGT Veljka Vlahovića 34
YU-11550 Lazarevac
Telephone +381-11-8122-665
Telefax +381-11-8122-665
E-mail vidicb@EUnet.yu

ZA South Africa
Powermite Africa PTY Ltd.
P.O.Box 7745, Johannesburg 2000
92, Main Reef Road
Technikon Roodeport 1724
Telephone +27-11-2 71-00 00
Telefax +27-11-7 60-30 99
E-mail Powermite.jhb@global.co.za
Internet www.powermite.co.za